8.5 Noise

8.5.1 Introduction

This section presents an evaluation of sound levels associated with the Project at the South Bay Replacement Project (SBRP), located in the City of Chula Vista (County of San Diego). The combined site of the SBPP and SBRP is located on San Diego Unified Port District (Port) property between Bay Boulevard and San Diego Bay, to the west of Interstate 5 (I-5). The area around and near the plant site includes commercial businesses (to the east and south), recreational uses (Chula Vista Marina to the north), and residential land uses (to the east, across the I-5, and to the south, south of Palomar Avenue).

The SBRP project consists of three phases:

- **The Construction Phase—**The first phase is the demolition of existing structures and foundations associated with the former Liquefied Natural Gas (LNG) Facility, preparation of construction lay down areas, and the construction of the SBRP on 12.9 acres within the LNG site. Initial operations of SBRP will include an interim interconnection to the SDG&E transmission system through a new 230-kVA substation on approximately 0.6 acres (interconnecting to SDG&E's Otay 230-kV transmission line) and an underground interconnection to the existing SDG&E South Bay 138/69kV substation.

- **The Demolition Phase—**The second phase of project construction activities will occur after the SBRP achieves commercial operation. The construction activity during this phase will be the demolition of the existing South Bay Power Plant (SBPP) facilities, excluding the existing South Bay Substation, which will remain in service until the new substation is constructed.

- **The New Substation Phase—**The final phase of project will involve the construction of the SDG&E substation on approximately 6.5 acres south of and adjacent to the SBRP site. This construction will be performed after the start up of the SBRP. After the new SDG&E substation construction is completed and operational, and the SBRP generator leads are attached to the new facilities, SDG&E could then initiate demolition activities on the South Bay Substation, located north of the SBRP project site. These demolition activities, however, are not part of the scope of this AFC. They are part of a separate project of unknown timing and scope.

The reason there are two interconnect steps is to ensure that interconnection can be secured by the proposed on-line date of SBRP (2010). Also SDG&E holds certain obligations associated with a new substation as part of its MOU with the City of Chula Vista, but these obligations occur *after* the demolition of the South Bay Power Plant (SBPP).

The existing SBPP uses gas-fired boilers to create steam which, in turn, powers steam turbines to generate electricity. This SBPP equipment will be replaced by the SBRP Project which will be a new, a modern plant utilizing combined-cycle technology- the industry standard for power generation in the United States. As a modern power plant, the SBRP project will have much lower noise levels as compared to the SBPP facility.

Generally, the design basis for noise control is the minimum, or most stringent, noise level required by any of the applicable laws, ordinances, regulations, or standards (LORS). This design philosophy will ensure that the noise from this project will meet the levels of both the City of Chula Vista, as well as the CEC's guideline for the late-night noise increase increment. These requirements and guidelines will be met with a combination of project design features that optimize noise reduction and control from the expected major noise sources. These noise reduction features involve both architectural and equipment considerations. Architectural considerations involve the sound isolation performance of the architectural components, including the walls, roof, doors, windows, and louvers, of the main gas turbine and steam turbine buildings. Equipment considerations involve reduced noise emissions from the equipment sources themselves, as well as sound treatment systems including enclosures, silencers, and localized barriers. The noise control design features include:

- Housing the combustion turbine generators, steam turbine generator, fuel gas compressors, and water treatment equipment and related support equipment (pumps, valves, compressors, etc.) inside of acoustically treated buildings;
- Noise control strategies for the heating, ventilation, and air conditioning (HVAC) systems;
- Low-noise sound level specifications for the heat recovery steam generator packages, the combustion turbine air inlets/filters, the air-cooled condenser, the transformers, the boiler feed pumps, and the cooling water heat exchanger (and other, secondary equipment items);
- Noise-control packages for each heat recovery steam generator, including stack silencers, increased casing thickness, and/or a transition duct acoustical shroud;
- Combustion turbine inlet silencers;
- Air-cooled condenser and cooling water heat exchanger low-noise designs, including low-speed fans;
- Localized noise barrier walls around the main power transformers;
- Low-noise features for the boiler feed pumps (possibly enclosures and/or casing blanket packages); and
- Steam and discharge vents will be equipped with appropriate silencers.

Each equipment component will be further evaluated during the Project's detailed engineering phase to determine the noise control strategies necessary to support the overall project acoustical design.

Subsection 8.5.2 presents the fundamentals of acoustics while a description of the LORS is presented in Subsection 8.5.3. The affected environment is described in Subsection 8.5.4 and the environmental consequences (i.e., the potential project effects from both construction and operation) are analyzed in Subsection 8.5.5. While the Project design features and noise control strategies will yield noise impacts that are below the level of significance (per applicable standards and criteria), Subsection 8.5.6 presents mitigation measures aimed at (1) enabling feedback for community concerns regarding noise during construction of the

project, (2) reducing noise during demolition and construction, and (3) establishing a mechanism for verifying compliance following commercial operation of the Project. The involved agencies and agency contacts are listed in Subsection 8.5.7. The permits and permitting schedule are discussed in Subsection 8.5.8. Subsection 8.5.9 provides the references for this noise section.

8.5.2 Fundamentals of Acoustics

Acoustics is the study of sound, and noise is defined as unwanted sound. Airborne sound is a rapid fluctuation or oscillation of air pressure above and below atmospheric pressure creating a sound wave.

Acoustical terms used in this subsection are summarized in Table 8.5-1.

TABLE 8.5-1
Definitions of Acoustical Terms

Term	Definition
Ambient Noise Level	The composite of noise from all sources near and far. The normal or existing level of environmental noise or sound at a given location. The ambient level is often defined by the L_{eq} level (see below for more information on special noise metrics).
Background Noise Level	The underlying, ever-present lower level noise that remains in the absence of intrusive or intermittent sounds. Distant sources, such as traffic, typically make up the background noise level. The background level is generally defined by the L_{90} percentile noise level.
Intrusive Noise	Noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, time of occurrence, tonal content, the prevailing ambient or background noise level, and the sensitivity of the receiver. The intrusive level is generally defined by the L_{10} percentile noise level.
Decibel (dB)	A decibel is a dimensionless unit of level which denotes the logarithmic (base 10) ratio between two quantities that are proportional to power; the denominator of this ratio is a reference standard which must be specified to give the decibel level any meaning. Decibels (abbreviated dB) describe the loudness of sound and noise in terms of sound pressure levels and sound power levels.
Sound Pressure Level	The level, expressed in terms of decibels, that is 20 times the logarithm of the given sound pressure over the reference pressure of 20 micropascals = 2×10^{-5} Newtons/m^2 = 0.0002 μbar = 2×10^{-4} dynes/cm^2. Sound Pressure Level, abbreviated SPL or Lp, is dependent on the distance from the source to the receiver.
Sound Power Level	The level, also expressed in terms of decibels, that is 10 times the logarithm of the given sound power over the reference power of 1 picowatt. Sound Power Level, abbreviated PWL or Lw, is an inherent characteristic of the noise source and, therefore, is independent of distance from the source.
A-Weighted Sound Level (dBA)	The sound level in decibels as measured on a sound level meter using the A-weighted filter network. The A-weighted filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. Thus, A-weighted sound pressure levels are the most common noise metric used to describe community noise and all sound levels in this report are A-weighted.
Frequency	The number of times in 1 second that a periodic phenomenon repeats itself. The units of frequency are the hertz (Hz) which corresponds to one cycle per second.

TABLE 8.5-1
Definitions of Acoustical Terms

Term	Definition
Band Pressure Level or Band Sound Level	The sound pressure level within a specified frequency band. The bandwidth is usually indicated by a descriptive modifier, such as octave band level or third-octave band level. As an example, the octave band level is the sound level within a frequency band corresponding to a specified octave. An octave is the frequency interval between two sounds whose basic frequency ratio is 2 (e.g. 500 Hz and 1,000 Hz are one octave apart). Note that octave band center frequencies and band limits are standardized by international agreement.
Equivalent Noise Level (L_{eq})	The energy-equivalent noise level over a specified period of time (e.g., 1 hour). It is an equivalent single value of sound that includes the same acoustic energy as the actual, varying sound levels in a given period of time.
Day-Night Noise Level (L_{dn} or DNL)	This metric was developed to account for an increased human sensitivity to nighttime noise levels and for the greater potential annoyance of noise during the nighttime hours. The actual nighttime noise levels are adjusted, based on the premise that both exterior and interior noise levels are generally lower than daytime levels and, therefore, nighttime noise can be more noticeable (than daytime conditions at the same location). Also, since most people sleep at night, there is often an increased sensitivity to intrusive noises. The day-night noise level, abbreviate L_{dn}, is the energy-average A-weighted sound level over a 24-hour period with an added 10 dB adjustment (penalty) for sounds that occur between 10 p.m. and 7 a.m.
Community Noise Equivalent Level, CNEL	The CNEL was developed in California for evaluating noise levels in residential communities. The CNEL is similar to the L_{dn}, but differs in that a 5 dB evening penalty is also added to sounds that occur between 7 p.m. and 10 p.m. (as well as the L_{dn} penalty of +10 dB for nighttime sounds). In a large percentage of cases for general community noise, the L_{dn} and CNEL can be considered as equivalent.
Percentile Noise Level or Statistical Sound Level (L_n)	The noise level exceeded during *n* percent of the measurement period, where *n* is a number between 0 and 100. The most common statistical sound levels used in community noise analyses are the L_{90}, L_{50} and L_{10} levels. The L_{90} is the sound level exceeded 90 percent of the time and is often considered the effective background or residual noise level. The L_{50} is the sound level exceeded 50 percent of the time and is known as the median noise level. The L_{10} is the sound level exceeded 10 percent of the time, is a measurement of intrusive sounds, such as aircraft flying overhead, and is commonly known as the effective maximum or intrusive sound level.

Sources: CH2M-Hill and Alliance Acoustical Consultants, Inc.

Loud noise can be annoying and it can have negative health effects. The effects of noise on people can be listed in three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction.
- Interference with activities such as speech, sleep, learning.
- Physiological effects such as startling and hearing loss (both temporary and permanent).

In most cases, environmental noise produces effects in the first two categories only. However, unprotected workers in some industrial work settings may experience noise effects in the last category. Sections 8.5.3.1.2 and 8.5.3.2.1 address how the SBRP Project will comply with pertinent worker noise exposure protection regulations to safeguard against employee hearing loss.

Given the wide variation in individual thresholds of annoyance, habituation to noise, and situational reactions to noisy environments, there is no common standard for assessing the subjective effects of noise, or to measure the corresponding reactions of annoyance and dissatisfaction. Thus, an important way of determining a person's subjective reaction to a new noise is by comparing it to the existing or ambient environment which that person is familiar with. In general, the more the level or the tonal (frequency) variations of a noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise will be; as judged by each exposed individual.

As a frame of reference for bridging objective sound levels to subjective impressions, Table 8.5-2 shows the A-weighted noise levels of sounds measured in common interior and exterior environments relative to their typical subjective impression.

TABLE 8.5-2
Typical Sound Levels Measured in the Environment and Industry

Example Noise Source or Example Noise Environment	A-Weighted Sound Level in Decibels	Subjective Impression
Shotgun (at shooter's ear) or on a carrier flight deck	140	Painfully loud
Civil defense siren (100 ft)	130	
Jet takeoff (200 ft)	120	Threshold of pain
Loud rock music	110	
Pile driver (50 ft)	100	Very loud
Ambulance siren (100 ft) or in a boiler room	90	
Pneumatic drill (50 ft) or inside a noisy restaurant	80	
Busy traffic; hair dryer	70	Moderately loud
Normal conversation (5 ft) or in a data processing center	60	
Light traffic (100 ft); rainfall or in a private business office	50	
Bird calls (distant) or inside an average living room or library	40	Quiet
Soft whisper (5 ft); rustling leaves of inside a quiet bedroom	30	
In a recording studio	20	
Normal breathing	10	Threshold of hearing

Source: Beranek, 1998.

8.5.3 Laws, Ordinances, Regulations, and Standards

This section presents and discusses the Laws, Ordinances, Regulations, and Standards (LORS) that apply to noise generated by the project. An overview of the LORS is presented in Table 8.5-3 and the referenced subsections provide further details and explanatory notes. Among the local LORS discussed in this section are certain ordinances, plans or policies of the City of Chula Vista. For informational purposes, this section reviews compliance of the Project with such requirements even though the Applicant understands that they are not applicable to the Project as a matter of law. (*See* Section 8.4 — Land Use, for a discussion of

this issue.) The analysis of City LORS in this section is informational and does not address the jurisdictional issues discussed in Section 8.4.

TABLE 8.5-3
Applicable Laws, Ordinances, Regulations, and Standards

LORS	Purpose	AFC Subsection discussing Applicability and Details
Federal Offsite		
U.S. EPA	Guidelines for state and local governments.	8.5.3.1.1.
U.S. Fish and Wildlife Service	Prevention of impacts to wildlife.	8.5.3.1.3
Federal Onsite		
OSHA	Exposure of workers over 8-hour shift limited to 90 dBA.	8.5.3.1.2, 8.5.5.2.1 and 8.5.5.3.1. Also see Section 8.7, Worker Safety
State Onsite		
Cal/OSHA 8 CCR Article 105 Sections 095 et seq.	Exposure of workers over 8-hour shift limited to 90 dBA.	8.5.3.2.1, 8.5.5.2.1 and 8.5.5.3.1. Also see Section 8.7, Worker Safety
State Offsite		
Calif. Vehicle Code Sections 23130 and 23130.5	Regulates vehicle noise limits on California highways.	8.5.3.2.2. Delivery trucks and other vehicles will meet Code requirements.
Calif. Fish and Game Dept.	Prevention of impacts to wildlife.	8.5.3.2.3.
Calif. Energy Commission (CEC)	Guidelines for power plant noise emissions into the community.	8.5.3.2.4
Local		
California Government Code Section 65302	Requires local government to prepare plans that contain noise provisions.	Several jurisdictions under Subsection 8.5.3.3.
County of San Diego	See text	8.5.3.3.1
City of San Diego	See text	8.5.3.3.2
City of Coronado	See text	8.5.3.3.3
City of Imperial Beach	See text	8.5.3.3.4
City of National City	See text	8.5.3.3.5
Port of San Diego, under the Bay Front Master Plan (BFMP)	See text	8.5.3.3.6
City of Chula Vista	See text	8.5.3.3.7

8.5.3.1 Federal

8.5.3.1.1 U.S. Environmental Protection Agency (EPA).

Guidelines are available from the U.S. EPA (1974) to assist state and local government entities in development of state and local LORS for noise. Because there are local LORS that apply to this project, these federal guidelines are not applicable.

8.5.3.1.2 Occupational Safety and Health Administration (OSHA).

Onsite noise levels are regulated by the Occupational Safety and Health Act of 1970 (29 Code of Federal Regulations [CFR] 1910.95). The noise exposure level of workers is limited to 90 dBA, over a time-weighted average (TWA) eight-hour work shift to protect hearing. If there are workers exposed to a $TWA_{8\text{-}hr}$ above 85 dBA (i.e. the OSHA Action Level), then the regulations call for a worker hearing protection program that includes baseline and periodic hearing testing, availability of hearing protection devices, and training in hearing damage prevention. Given previous experience at similar modern, combined-cycle facilities, onsite noise levels during normal operations are expected to generally be in the range of 70 to 85 dBA. The relatively few areas that may be above 85 dBA will be posted as high noise level areas and hearing protection will be required therein. The power plant will implement a hearing conservation program for applicable employees and maintain $TWA_{8\text{-}hr}$ exposure levels below 90 dBA.

8.5.3.1.3 U. S. Fish and Wildlife.

Please see the Section 8.2 Biological Resources for a discussion of potential noise impacts to biological resources.

8.5.3.2 State of California

8.5.3.2.1 Cal-OSHA.

The California Department of Industrial Relations, Division of Occupational Safety and Health enforces California Occupational Safety and Health Administration (Cal-OSHA) regulations (found in Title 8 of the California Code of Regulations (CCR), General Industrial Safety Orders, Article 105, Control of Noise Exposure, Sections 5095, et seq.). These California worker protection regulations are the same as the federal OSHA regulations described above.

8.5.3.2.2 California Vehicle Code.

Noise limits for highway vehicles are regulated under the California Vehicle Code, Sections 23130 and 23130.5. The limits are enforceable on the highways by the California Highway Patrol and by the County Sheriff Department.

8.5.3.2.3 California Fish and Game Dept.

Please see the Biological Section (8.2) for a discussion of potential noise impacts to biological resources.

8.5.3.2.4 California Energy Commission (CEC).

The Commission has determined that a significant noise impact may occur if noise from a new facility increases existing late night L_{90} noise levels by 5 or more dB at nearby residential areas (Baker, 1999).

8.5.3.3 Local

As discussed above in Section 8.5.3, among the local LORS discussed in this section are certain ordinances, plans or policies of the City of Chula Vista. For informational purposes, this section reviews compliance of the Project with such requirements even though the Applicant understands that they are not applicable to the Project as a matter of law. (*See* Section 8.4 for a discussion of this issue.) The analysis of City LORS in this section is informational and does not address the jurisdictional issues discussed in Section 8.4.

The California State Planning Law (California Government Code Section 65302) requires that all cities, counties, and entities (such as multi-city port authorities) prepare and adopt a General Plan to guide community change. In the general vicinity of the SBRP, there are several cities and entities that are adjacent to or near the proposed project site, so, in the interest of a thorough discussion, the pertinent noise provisions for these separate entities are discussed in the following subsections.

8.5.3.3.1 County of San Diego

The nearest unincorporated county land is over 2.5 miles to the northeast of the project site. At this relatively long distance in an urban/suburban setting, noise impacts to county lands are not considered to be of concern.

8.5.3.3.2 City of San Diego

The nearest City of San Diego residential usage is over 1.5 miles to the south of the project site. At this relatively long distance in an urban/suburban setting, noise impacts to county lands are considered to not be of concern. San Diego commercial receptors are also to the south at approximately 2,000 feet from the project site (beyond similar commercial receptors in the City of Chula Vista). Since both cities have the same noise level limits for commercial land uses and since the City of Chula Vista commercial areas are closer than the City of San Diego's, if compliance is met at the Chula Vista areas, then it will also be met at the further-away San Diego commercial zones.

8.5.3.3.3 City of Coronado

The closest City of Coronado land is currently used by the U.S. Navy for a Naval Radio Station and it is across San Diego Bay; over 1.75 miles to WSW of the project site. At this relatively long distance, even with propagation over water, noise impacts to City of Coronado lands are not considered to be of concern.

8.5.3.3.4 City of Imperial Beach

Likewise, the nearest Imperial Beach areas are approximately 1.5 miles to the southwest of the project site and, thus, no noise impacts are expected in Imperial Beach.

8.5.3.3.5 City of National City

There is a narrow sliver of land due west of the project site that belongs to National City (presumably, for waterway right-of-way deeding purposes), but this area is believed to be under water most of the time (depending on tides) and, therefore, not useable land and not inhabitable. As with the County of San Diego jurisdiction, the nearest National City land use is over 2.5 miles from the project site (to the north) and noise impacts are not of concern at this relatively long distance.

8.5.3.3.6 San Diego Unified Port District, Chula Vista Bay Front Master Plan

Existing recreational uses (Marina, Marina View Park, and RV areas) are 1 mile, 0.8 miles, and 1.3 miles, respectively, NNW of the project site centroid. Future envisioned recreational uses (for example, open fields, parklands, and a potential RV facility) are in the planning stages for locations north of the SBRP site, but are conceptual at this time and subject to change. As part of the Chula Vista Bay Front Master Plan, the Port does not currently have specific noise level limits for these areas. In this absence, the following noise level limits are suggested by the Applicant and are compatible with the future, envisioned recreational uses that may be developed under the Bay Front Master Plan. See Section 8.4 – Land Use for more discussion of the Chula Vista Bay Front Master Plan and its relation to the SBRP.

TABLE 8.5-4
Recommended Noise Standards for the Bay Front Master Plan areas adjacent to the Project Site

Plant Conditions	BFMP Areas	Suggested Noise Level Limit, A-weighted hourly L_{eq},
Normal Operations	Recreational, RV/camping	65 dBA
Upset/Emergency	All areas	80 dBA anytime
Construction/demolition activities	All areas (if developed at that time)	Applicant proposed to defer to City of Chula Vista codes for guidance (see below)

Source: Alliance Acoustical Consultants, Inc., 2005

8.5.3.3.7 City of Chula Vista

The SBRP site is within the city limits of the City of Chula Vista and also within the Port. Among the local LORS discussed in this section are certain ordinances, plans, or policies of the City of Chula Vista. For informational purposes, this section reviews compliance of the Project with such requirements even though the Applicant understands that they are not applicable to the Project as a matter of law. (See Section 8.4 for a discussion of this issue.) The analysis of City LORS in this section is informational and does not address the jurisdictional issues discussed in Section 8.4.

The majority of adjacent receptor areas are in the Chula Vista city limits with receptors are to the north, northeast, east, southeast, and south of the Project site. The main requirements of the Chula Vista Noise Ordinance are found in Chula Vista Municipal Code, Title 19, Chapter 19.68.030. Additional noise provisions for construction-related activities are found in Sections 19.68.060 and 17.24.050, paragraph J. The Port, as a distinct and separate entity, may apply the Chula Vista noise levels as guidance or otherwise, or may choose to enact other standards for the lands under its control. The Chula Vista noise regulations are summarized in the following table.

TABLE 8.5-5
Noise Standards for the City of Chula Vista

Noise Source Conditions	Receiving Land Use	Noise Level Limit, A-weighted hourly L_{eq},
Normal Operations	Single-family residential (SFR)	55 dBA daytime*, 45 dBA nighttime*
Normal Operations	Multi-family residential (MFR)	60 dBA daytime, 50 dBA nighttime

TABLE 8.5-5
Noise Standards for the City of Chula Vista

Noise Source Conditions	Receiving Land Use	Noise Level Limit, A-weighted hourly L_{eq},
Normal Operations	Commercial	65 dBA daytime, 60 dBA nighttime
Normal Operations	Light Industrial	70 dBA anytime
Normal Operations	Heavy Industrial	80 dBA anytime
Normal Operations	Recreational, RV/camping	No requirements listed
Upset/Emergency	All areas	No requirements listed
Construction/demolition activities	All areas	19.68.060: above restrictions for on-going activities do not apply; 17.24.050, Para J: construction activities prohibited in residential areas between 10 p.m. to 7 a.m., M-F and between 10 p.m. to 8 a.m. on Saturdays and Sundays.

Note: Per Chula Vista Municipal Code Section 19.68.030, Subsection B ("Corrections to Exterior Noise Level Limits"), paragraph 4: "If the measured ambient levels exceeds that permissible in Table III [i.e. reproduced in AFC Table 8.5-5], the allowable noise exposure standard shall be the ambient noise level." As will be discussed in Section 8.5.4.1 below, this provision applies to the majority of noise-sensitive receptors around the project site. Therefore, the effective noise level limits that are applicable to this SBRP Project are *higher* than the tabled nominal values above.

Source: Alliance Acoustical Consultants, Inc., 2005

* Daytime and Nighttime defined as follows: Weekday daytime = 7 a.m. to 10 p.m.;
Weekday nighttime = 10 p.m. to 7 a.m.;
Weekend daytime = 8 a.m. to 10 p.m.;
Weekend nighttime = 10 p.m. to 8 a.m.

Chula Vista also address potential vibration impacts in Sections 19.66.080 and 19.66.060 wherein no vibration, other than from transportation facilities or temporary construction work, is permitted which is discernible without instruments; as experienced (typically) at the lot line of the establishment suspected of generating the vibration.

8.5.4 Affected Environment

The proposed SBRP site is located on a 12.9 acre portion of the 33-acre former LNG site. This site is between Bay Boulevard and San Diego Bay; approximately centered (north-to-south) between the imaginary westward extensions of L and Palomar Streets. The project site is immediately south of the existing, 115-acre industrial parcel that includes the existing SBPP facility.

Existing uses immediately adjacent to the project site are primarily commercial; both across Bay Boulevard to the east and abutting the site to the south (the Bayside Industrial Park). On the west side of the project are ocean water evaporation ponds used to harvest sea salt, with the San Diego Bay beyond. To the north are areas currently used by the existing power plant (including the main power generation structure, tank farms, outdoor storage areas, and open land) that are planned to be developed under the Chula Vista Bay Front Master Plan.

Farther to the north, across the channel running east-west along the extension of J Street, lies Chula Vista Marina View Park and the Chula Vista Harbor and Marina. Farther to the east,

beyond the commercial and light industrial parks along Bay Boulevard, is the I-5 freeway, followed by a mobile home trailer park (Brentwood Park), single-family residential areas, and Harborside Elementary School (the closest school to the project site). Farther to the south are more commercial and light industrial entities, followed by the processing and stockpiling areas of the sea salt harvesting business.

The closest residential land use is the Brentwood (mobile home) Park at approximately 1,500 feet from the project site centroid to the closest dwelling units. Other nearby residential uses in the vicinity of the project site include:

- a small neighborhood to the east of Bay Boulevard, starting at Stella Street (approximately 2,100 feet from the project centroid[1]),
- scattered single-family houses on Walnut and Trenton Streets, north of Palomar Street (approximately 2,075 feet from the project centroid),
- a single-family neighborhood bounded by Colorado, Arizona, Broadway, and Naples Streets (approximately 2,375 feet from the project centroid), and
- several multi-family complexes north of L Street and east of the trolley rail line (approximately 3,000 feet from the project centroid).

The closest school is the aforementioned Harborside Elementary School at the northeast corner of Naples Street and Industrial Boulevard (with a small, vacant buffer zone between the railroad tracks and the actual school fenceline). No other schools were found to be within approximately 1½ miles of the proposed project.

Likewise, there are no houses of worship that were located within approximately 1 mile of the project site (the closest are between Broadway and 4th Avenue to the east and between Palomar Street and Main Street to the south).

The closest medical facility is the County Health and Human Services Agency clinic at the northeast corner of Industrial Boulevard and Oxford Street, but this is a day-use, outpatient-only facility with no overnight patient care. The next closest medial facility is a full-service hospital, Scripps Memorial Hospital – Chula Vista, near 4th Avenue and H Street; nearly 2 miles from the project site.

See also Section 8.4 – Land Use for additional information regarding land use and project vicinity information.

Current sources of environmental noise in the vicinity of the project site include the existing SBPP facility, I-5 freeway, and other transportation-related sources. These transportation-related sources are dominated by heavy vehicle flows on I-5, as well as significant arterial noise on Bay Boulevard, Palomar Street, Industrial Boulevard, and L Street. There is also significant community noise from the rail lines immediately east of Industrial Boulevard that serve both light-rail, trolley cars (the San Ysidro Southline, "red-line trolley") and heavy, freight rail operations (during the late-night hours after the trolley runs have concluded). Further, there was noted to be significant aircraft noise influences from

[1] The project centroid is taken to be the center of the proposed built-up power island area, excluding the SDG&E transmission easement, buffer zones, drainage ponds, and substations.

commercial, military, general-aviation, and helicopter fly-overs (see the next subsection for more information on the ambient noise environments around the proposed project site).

8.5.4.1 Ambient Noise Survey Information

As part of the AFC analysis, measurements were collected on December 14, 15, and 16, 2005 at 11 locations depicted in Figure 8.5-1. These locations and their respective relevancies were discussed and agreed upon with CEC staff prior to the measurement survey. Table 8.5-6 summarizes these December 2005 ambient survey locations and their individual importance regarding community noise assessment around potential power plants.

TABLE 8.5-6
Summary of AFC Ambient Measurement Locations and Relevance

Location	Full Description	Importance
AFC-1	West end of Unit D at 890 Colorado Street (Sierra Creek Apartments); 100' north of L Street sidewalk; 55' east of centerline of nearest rail line; on roof of attached laundry room*; near B&V location NML 2 of May 2004*	Closest multi-family land use (and near previous location used by Black & Veatch)
AFC-2	Brentwood Trailer Park, near I-5 side; at south end of Unit F-8 (178' to park fenceline plus ~35' to edge of pavement on I-5) *; in general vicinity to B&V location NML 1 of May 2004*	Nearest single-family residential area and a representative location in trailer park on the I-5 side
AFC-3	Brentwood Trailer Park, near Industrial Boulevard side; at east end of Unit I-17 (94' to park boundary wall plus ~20' to curb); *in general vicinity to B&V location NML 1 of May 2004*	Nearest single-family residential area and a representative location in trailer park on the Industrial Blvd. side
AFC-4	West property boundary of Harborside Elementary School; 85' south of Naples Street curb	Closest school
AFC-5	NW corner of front yard at 889 Stella Street; *near B&V location NML 3 of May 2004*	Closest single-family residential area to the southeast of the site
AFC-6	Near southwest corner of front grassy area at 1021 Bay Boulevard (near entrance sign)	Closest commercial land use
AFC-7	On 115-acre SBPP industrial site; south side of plant at extension of water intake structure bridge; on top of fuel oil tank berm; west side of access road	Assessing SBPP noise to south; near potential BFMP bay access area
AFC-8	On 115-acre SBPP industrial site; in truck wash-out area; along extension of north-side longitudinal face of power structure; 610' east of east face of Unit #4	Assessing SBPP noise to east; near potential BFMP open/park area
AFC-9	On 115-acre SBPP industrial site; 305' northward from Telegraph Creek bridge; in line with Unit #2 stack; half-way between plant roads	Assessing SBPP noise to NE; at nearest point of potential BFMP MFR condo complexes
AFC-10	On 115-acre SBPP industrial site; in outdoor storage yard; in line with west end of small turbine yard and north end of fuel oil tank containment berm	Assessing SBPP noise to north; in potential BFMP RV development
AFC-11	Chula Vista Marina View Park; at water side of park (toward plant); adjacent to south-end picnic area (near parking lot); at tree line next to water's edge	Closest recreational use

Source: Alliance Acoustical Consultants, Inc., 2006

Since this monitoring was conducted, there have been no significant environmental changes in the area. To fully document these noise conditions, all 11 locations were monitored for at least 25 hours continuously (per CEC guidelines) and short-term frequency-band level data

(typically 15-minute samples) were also acquired during at least mid-day, evening, and late-night periods. Given the large amount of time-history and spectral noise data collected during the (Dec. '05) AFC ambient survey, the bulk of the survey details and data results are presented in Noise Appendix 8.5a, while this main text gives the survey summaries.

Long-term, A-weighted Noise Levels. Measurement results for the 25-hour, long-term ambient sound level monitoring during the December 2005 survey are summarized in Table 8.5-7. This table provides measurement period at each location, as well as the key noise metrics in terms of the L_{90} (residual) sound level, the L_8 (intrusive) sound level[2], and the one-hour Leq (energy-equivalent) sound level. The latter metric is useful since the City of Chula Vista Noise Ordinance relies upon this averaged sound level type.

TABLE 8.5-7
Summary of Long-term AFC Ambient Measurement Results

			Long-term Monitoring Data Ranges*		
Location	**Brief Description**	**Long-term Monitoring Period [date with hr:min]**	**15-min. L_{90} (min, max times) [hr:min]**	**1-hour L_{eq} (min, max times) [hr:min]**	**15-min. $L_8 \approx L_{10}$ (min, max times) [hr:min]**
AFC-1	Colorado Street Apts	12/14/05 09:50 to 12/15/05 11:44	49.6 – 65.5 02:51, 14:36	55.1 – 69.0 dBA 03:06+, 16:06+	54.9 – 71.9 03:21, 16:36
AFC-2	Brentwood Trailer Park, I-5 side	12/15/05 12:00 to 12/16/05 13:35	50.1 – 64.9 01:57, 14:42	55.5 – 65.9 dBA 01:57+, 13:57+	57.8 – 68.1 01:57, 14:42
AFC-3	Brentwood Trailer Park, Industrial Blvd side	12/15/05 12:12 to 12/16/05 13:45	43.3 – 58.9 23:45, 15:45	46.5 – 64.2 dBA 00:45+, 12:45+	46.9 – 69.0 00:45, 15:45
AFC-4	Harborside Elem. School	12/15/05 12:29 to 12/16/05 14:01	43.7 – 60.7 23:43, 13:43	49.0 – 66.1 dBA 01:13+, 13:13+	49.7 – 74.7 00:43, 12:28
AFC-5	Stella Street	12/14/05 10:10 to 12/15/05 11:30	42.2 – 58.2 00:45, 05:45	49.3 – 62.2 dBA 01:30+, 14:30+	48.4 – 67.1 02:00, 16:45
AFC-6	1021 Bay Blvd	12/14/05 08:45 to 12/15/05 10:08	47.8 – 62.9 02:47, 09:47	55.7 – 68.3 dBA 01:02+, 09:02+	58.1 – 75.6 03:17, 09:47
AFC-7	SBPP site; south of plant	12/15/05 10:21 to 12/16/05 12:30	58.1 – 64.3 13:51, 07:36	59.6 – 64.8 dBA 12:36+, 07:36+	59.9 – 68.1 12:51, 11:36
AFC-8	SBPP site; east of plant	12/15/05 10:31 to 12/16/05 12:50	51.7 – 65.2 11:45, 07:30	56.0 – 66.2 dBA 13:00+, 11:00+	53.9 – 67.6 11:00, 09:00
AFC-9	SBPP site; NE of plant	12/15/05 11:10 to 12/16/05 12:57	52.1 – 62.3 11:15, 07:15	54.8 – 62.4 dBA 00:15+, 11:15+	54.9 – 65.9 00:15, 11:30
AFC-10	SBPP site; north of plant	12/15/05 10:42 to 12/16/05 12:41	56.6 – 62.8 12:12, 07:12	57.9 – 66.6 dBA 13:57+, 10:57+	58.4 – 75.7 14:12, 10:57
AFC-11	Marina View Park	12/14/05 09:20 to 12/15/05 11:20	44.0 – 58.3 01:07, 05:52	49.4 – 59.1 dBA 01:22+, 05:22+	47.1 – 65.2 01:07, 16:37

Source: Alliance Acoustical Consultants, Inc., 2006

* data acquisition used 15-minute sampling periods which are reported for L_{90} and L_8 metrics, while the 15-minute L_{eq} data were post-processed to arrive at the reported one-hour L_{eq} value (for use with respect to the City of Chula Vista Noise Ordinance).

[2] Note that the L_8 was the actual noise metric sampled during the survey, but it is considered to be effectively equivalent to the L_{10} (intrusive) sound level for community noise assessments. These two metrics will, therefore, be used interchangeably in this document.

An example of a time-history record of sound levels over the 25-hour survey period is shown in Figure 8.5-2. This chart presents the pertinent sound levels over time at Location AFC-1 (near the corner of L Street and Industrial Boulevard). The remainder of the 25-hour time-history charts are given the Noise Appendix 8.5a.

This Location AFC-1 record indicates that, throughout the day, the noise environment is very stable (note how the L_8 and L_{90} lines 'track' each other during the daylight hours and into the evening), which is a result of a steady noise source – in this case, the I-5 freeway. Residual (background) noise levels (L_{90}) between about 5 a.m. and 9 p.m. were uniformly in the range of 60 to 65 dBA, while the hourly L_{eq} values in this period were tightly clustered between 65 and 69 dBA; both owing to the dominance of the steady and continuous flow of cars that were observed at all hours of the day and night on Interstate-5. Note that these L_{eq} levels at AFC-1are 5 to 9 dB above the Chula Vista Noise Ordinance daytime limit for multi-family residential land uses. As the volume of traffic on the I-5 subsided overnight, the noise levels decreased such that the typical, late-night L_{90} levels were around 51 to 55 dBA and the associated L_{eq} levels were between 53 and 58 dBA. Only one 15-minute sampling period showed nighttime L_{eq} levels that were in compliance with the Chula Vista ordinance at this location. The two prominent 'spikes' in the late-night record (around 1:30 a.m. and 2:30 a.m.) are due to heavy freight train pass-bys that reportedly happen each weeknight after the Red-line trolley service has finished for the day (around midnight).

Also see Noise Appendix 8.5a for similar results on the remaining ten long-term survey locations.

Short-term, Spectral (Octave Band) Noise Levels. In addition to the long-term, A-weighted monitoring efforts, each ambient assessment location was also studied in terms of short-term (i.e. approximately 15 minute) frequency-band sampling to investigate the spectral characteristics of the existing noise environments.

TABLE 8.5-8
Summary of Short-term AFC Ambient Measurement Results

		Short-term Monitoring Periods [date with start time and duration in hr:min:second] and associated A-wtd L_{eq} Sound Levels			
Location	**Brief Description**	**Morning**	**Mid-day**	**Evening**	**Nighttime**
AFC-1	Colorado Street Apts	—	12/14/05 (Wed) 15:22:47 0:15:06 **68.0 dBA**	12/14/05 (Wed) 20:21:59 0:15:10 **66.3 dBA**	12/15/05 (Th) 1:57:57 0:15:30 **56.0 dBA**
AFC-2	Brentwood Trailer Park, I-5 side	—	12/15/05 (Th) 13:34:14 0:15:05 **66.4 dBA**	12/15/05 (Th) 20:25:50 0:15:12 **63.4 dBA**	12/16/05 (Fri) 3:45:24 0:15:06 **58.0 dBA**
AFC-3	Brentwood Trailer Park, Industrial Blvd side	—	12/15/05 (Th) 13:57:04 0:15:05 **59.8 dBA**	12/15/05 (Th) 20:05:14 0:15:11 **55.8 dBA**	12/16/05 (Fri) 3:21:43 0:15:04 **46.9 dBA**

TABLE 8.5-8
Summary of Short-term AFC Ambient Measurement Results

		Short-term Monitoring Periods [date with start time and duration in hr:min:second] and associated A-wtd L_{eq} Sound Levels			
Location	**Brief Description**	**Morning**	**Mid-day**	**Evening**	**Nighttime**
AFC-4	Harborside Elem. School	—	12/15/05 (Th) 14:41:00 0:15:11 **64.1 dBA**	12/15/05 (Th) 19:37:55 0:15:06 **58.6 dBA**	12/16/05 (Fri) 2:51:30 0:15:22 **59.0 dBA**
AFC-5	Stella Street	—	12/14/05 (Wed) 10:44:34 0:16:07 **64.8 dBA**	12/14/05 (Wed) 21:19:14 0:15:11 **57.2 dBA**	12/15/05 (Th) 1:31:36 0:14:44 **48.5 dBA**
AFC-6	1021 Bay Blvd	—	12/14/05 (Wed) 11:19:10 0:16:10 **67.2 dBA**	12/14/05 (Wed) 21:40:21 0:16:10 **62.3 dBA**	12/15/05 (Th) 2:23:45 0:15:38 **55.2 dBA**
AFC-7	SBPP site; south of plant	12/16/05 (Fri) 11:59:11 0:25:14 **64.6 dBA**	12/15/05 (Th) 15:14:33 0:15:05 **60.6 dBA**	12/15/05 (Th) 20:54:39 0:16:33 **65.1 dBA**	12/16/05 (Fri) 2:19:06 0:15:03 **63.0 dBA**
AFC-8	SBPP site; east of plant	12/16/05 (Fri) 11:07:56 0:17:34 **66.8 dBA**	12/15/05 (Th) 16:27:34 0:16:27 **59.8 dBA**	12/15/05 (Th) 21:26:19 0:15:08 **58.1 dBA**	12/16/05 (Fri) 1:34:44 0:15:15 **58.6 dBA**
AFC-9	SBPP site; NE of plant	12/16/05 (Fri) 10:36:06 0:15:05 **59.5 dBA**	12/15/05 (Th) 16:51:56 0:25:09 **56.5 dBA**	12/15/05 (Th) 22:13:36 0:15:28 **57.9 dBA**	12/16/05 (Fri) 1:13:30 0:15:04 **55.4 dBA**
AFC-10	SBPP site; north of plant	12/16/05 (Fri) 11:30:44 0:21:36 **61.0 dBA**	12/15/05 (Th) 15:59:49 0:15:19 **59.4 dBA**	12/15/05 (Th) 21:50:58 0:15:10 **61.1 dBA**	12/16/05 (Fri) 1:57:22 0:15:11 **60.8 dBA**
AFC-11	Marina View Park	—	12/14/05 (Wed) 14:25:40 0:15:48 **53.8 dBA**	12/14/05 (Wed) 20:51:16 0:15:31 **54.2 dBA**	12/15/05 (Th) 2:47:59 0:15:51 **54.8 dBA**

Source: Alliance Acoustical Consultants, Inc., 2006

* data acquisition used 15-minute sampling periods which are reported for L_{90} and L_8 metrics, while the 15-minute L_{eq} data were post-processed to arrive at the reported one-hour L_{eq} value (for use with respect to the City of Chula Vista Noise Ordinance).

An example of a frequency-band record of sound levels at different times of the day and night is shown in Figure 8.5-3. This chart presents the pertinent sound levels in industry-standard octave bands at Location AFC-1 (near the corner of L Street and Industrial Boulevard) during the discrete sampling periods given above. The remainder of the octave band charts is also provided the Noise Appendix 8.5a.

This Location AFC-1 spectral record indicates that the noise environment is being controlled by a common source throughout the day and night, given the very similar shapes of the

curves. There is only a relatively narrow range of magnitude changes between these curves, owing to a simple change in the overall intensity of the common source. From field observations at this location, the dominant source is traffic noise from the I-5 freeway, as well as vehicles on the nearby major arterial surface streets. The only significant parameter that is changing over the course of a typical 24-hour period is the amount of cars traversing those roadways (hence, the levels changes, but the common spectral shapes). Commuter and freight train pass-bys would present a somewhat different spectral record, but these events, although fairly frequent, are very short-lived with respect to the daily noise environment.

Also see Noise Appendix 8.5a for similar spectral results on the remaining ten survey locations.

The 24-hour metrics, CNEL and L_{dn}[3], were calculated from the sampled energy-average, L_{eq}, values, starting at the sample period nearest the first whole hour. The results of these calculations are given below.

TABLE 8.5S-6
Summary of 24-hour Ambient Noise Level Metrics, A-wtd Sound Pressure Level

Location	Brief Description	24-hour L_{eq}, dBA	L_{dn}, dBA	CNEL, dBA
AFC-1	Colorado Street Apts	66.4	71.3	71.6
AFC-2	Brentwood Trailer Park, I-5 side	62.8	67.3	67.7
AFC-3	Brentwood Trailer Park, Industrial Blvd side	56.8	60.3	60.8
AFC-4	Harborside Elem. School	60.5	65.1	65.4
AFC-5	Stella Street	58.9	62.5	62.7
AFC-6	1021 Bay Blvd	64.9	68.6	68.9
AFC-7	SBPP site; south of plant	62.7	69.4	69.6
AFC-8	SBPP site; east of plant	61.5	67.7	67.8
AFC-9	SBPP site; NE of plant	58.7	64.6	64.8
AFC-10	SBPP site; north of plant	61.4	67.6	67.8
AFC-11	Marina View Park	55.3	61.7	61.9

Source: Alliance Acoustical Consultants, Inc., 2006

Generally speaking, these long-term noise metrics indicate a fairly noisy environment as would be expected for community areas around significant noise sources, such as large transportation venues (e.g. airports or freeways) (Harris, 1998). In this case, for the areas in

[3] L_{dn} or DNL is the Day-Night Noise Level, a metric that was developed to account for an increased human sensitivity to nighttime noise levels and for the greater potential annoyance of noise during the nighttime hours. The actual nighttime noise levels are adjusted, based on the premise that both exterior and interior noise levels are generally lower than daytime levels and, therefore, nighttime noise can be more noticeable (than daytime conditions at the same location). Also, since most people sleep at night, there is often an increased sensitivity to intrusive noises. The day-night noise level, abbreviate L_{dn}, is the energy-average A-weighted sound level over a 24-hour period with an added 10 dB adjustment (penalty) for sounds that occur between 10 p.m. and 7 a.m. CNEL, or Community Noise Equivalent Level was developed in California for evaluating noise levels in residential communities. The CNEL is similar to the L_{dn}, but differs in that a 5 dB evening penalty is also added to sounds that occur between 7 p.m. and 10 p.m. (as well as the L_{dn} penalty of +10 dB for nighttime sounds). In a large percentage of cases for general community noise, the L_{dn} and CNEL can be considered as equivalent.

Chula Vista just east of the I-5 freeway, the noisy environment is primarily due to the proximity of the freeway, major arterial roadways, and a busy rail line. For areas just west of the I-5, the noise environment is still dominated by the freeway and other major roadways, along with contributions from the existing SBPP facility.

In summary, the general ambient noise environments around the SBPP/SBRP industrial site, as measured and observed in December of 2005, are condensed in Table 8.5-9.

TABLE 8.5-9
Summary of AFC Ambient Noise Environments

Location	Brief Description	General Noise Environment
AFC-1	Colorado Street Apts	Traffic noise on I-5, L Street, and the end of Industrial Blvd., plus frequent, but short-lived commuter and freight train pass-bys.
AFC-2	Brentwood Trailer Park, I-5 side	Traffic noise on I-5 totally dominates this location – at all hours of the day and night.
AFC-3	Brentwood Trailer Park, Industrial Blvd side	Traffic noise on I-5, as well as on Industrial Blvd., with some influence from the frequent, but short-lived commuter and freight train pass-bys.
AFC-4	Harborside Elem. School	Traffic noise on Industrial Blvd., as well as on I-5, plus frequent, but short-lived commuter and freight train pass-bys (after school hours).
AFC-5	Stella Street	Predominantly traffic noise from the I-5, as well as Bay Blvd. and Stella Street. Additional contributions from salt processing equipment, wild-life, and the existing SBPP (faintly audible; depending on time of day, contributions of other sources, and the SBPP loading).
AFC-6	1021 Bay Blvd	Predominantly traffic noise from the I-5, then from Bay Blvd., with additional contributions from wildlife and the existing SBPP (depending on time of day, contributions of other sources, and the SBPP loading).
AFC-7	SBPP site; south of plant	Predominantly the existing SBPP with additional contributions from surf and wind noise, as well as wildlife and aircraft flyovers.
AFC-8	SBPP site; east of plant	Predominantly the existing SBPP with additional contributions from wildlife, aircraft flyovers, and, in the distance, the I-5 traffic.
AFC-9	SBPP site; NE of plant	Predominantly the existing SBPP with additional contributions from traffic on Bay Blvd and the I-5, as well as wildlife and aircraft flyovers.
AFC-10	SBPP site; north of plant	Predominantly the existing SBPP with additional contributions from a gas metering station, wildlife, aircraft flyovers, and, in the distance, the I-5 traffic.
AFC-11	Marina View Park	Mostly the existing SBPP with additional contributions from vehicle traffic on Marina Parkway, wildlife, and activities at the Marina facility.

Source: Alliance Acoustical Consultants, Inc., 2006

8.5.4.2 Existing Noise Conditions Associated with SBPP

Existing noise levels at SBPP typically follow power generating load levels, which normally rise and fall, based on the demand for electricity. The operations of the SBPP and the associated noise levels generally follow a daily pattern. For example, the SBPP power output typically starts to increase in the early morning (i.e. around 5:00 to 6:00 a.m.) in conjunction with people waking up and starting their daily activities. At about this same time, background noise levels are also rising from increasing traffic volumes on the I-5 freeway, as

well as on major surface streets in the area (Bay Boulevard, Industrial Boulevard, L Street, and Palomar Street). General residential and commercial activities are also increasing, so the vehicle flows and commercial activities tend to offset the plant sounds.

This trend of rising noise from both the plant (as demand for electricity increases) and from the rest of the surroundings continues as the morning unfolds, but the background noise was subjectively judged to outpace the power plant emissions such that SBPP noise begins to be less evident throughout the major part of the working daytime hours.

The amount of power generated can go up and down throughout the day, but it is generally highest through the majority of daytime hours and, thus, SBPP noise levels are also highest during the day. However, as the noise measurements described in Appendix 8.5a indicate, SBPP sounds are not very audible during the day outside of the 115-acre SBPP industrial site and in the immediate vicinity along Bay Boulevard. The existing plant is not audible at all on the east side of the I-5 freeway; regardless of the time of day. This is due to the presence of other daytime activities, most notably high vehicle flows on city streets and the I-5 freeway, as well as other sounds associated with commercial and residential activities in the area.

As the workday winds down and the demand for power generating shifts from supplying business activities to supporting residential uses (e.g. meal preparation and evening activities), power production typically begins to ramp downward by 8:00 or 9:00 p.m. This is usually the case with SBPP output also, with the exception being during very high demand periods (e.g. summer heat spells), wherein power production and the associated noise emissions can remain significant until midnight (and beyond). Once SBPP power generating levels decline for the evening, noise levels from the plant are lower than during higher-demand daytime hours. These lower noise levels remain that way for most of the night until the cycle repeats itself again starting at 5:00 to 6:00 a.m.

It should be noted, however, that traffic flows on the I-5 were observed to remain steady and significant throughout the entire overnight period and these traffic flows are the dominant noise source for nearly all areas around (but off-site of) the 115-acre industrial parcel. For example, the lowest noise levels observed at measurement location AFC-2 in the Brentwood Trailer Park during the overnight hours were 55 to 56 dBA (L_{eq}); completely due to the traffic on I-5 (even at 2, 3, and 4 a.m.).

8.5.4.2.1 SBPP Noise Environment Analysis

To assess the SBPP plant noise contributions to ambient noise levels in the area, field measurement data was used to develop a SBPP-only noise profile. This synthesized SBPP noise profile was compared to the predicted noise profile for the new SBRP facility to get a sense of the changes to the noise environment due to the SBRP Project replacing the SBPP.

The heart of the synthesis process was establishing representative noise sources within the geometrical envelope of the existing SBPP structure and inputting these virtual sources into a computerized noise modeling program. By making iterative adjustments to the model, the predictive analysis was calibrated to match the measured noise levels at the closest survey locations (which were noted to be dominated by SBPP noise emissions)[4]. This modeling recreation was then used to extrapolate the hypothetical SBPP-only noise contributions to

[4] The primary locations used for the synthesis were AFC locations AFC-7, -8, -9, and -10, measured during the December 2005 ambient survey; given the long-term and stable noise level history for this data set.

the pertinent off-site receptor locations (for comparison to predicted, future noise contributions from the SBRP Project). This synthesized noise profile for the SBPP facilitated mathematical analyses of the community noise environment with the SBPP contributions subtracted out and the SBRP contributions added in to better understand the predicted future situation associated with the SBRP Project. For more details on the modeling process, please see Appendix 8.5c.

The measured noise levels that were used to calibrate this model were taken during the early daytime record for Friday, December 16th (approximately 07:00 to around 09:00) at which time Units 1, 2, and 4 were all at approximately 50 percent capacity and ramping up to a late-morning/early afternoon plateau of ~70 percent output for Units 1 and 2 and ~60 percent output for Unit 4. Unit 3 was off for this 12/16 morning period (see Appendix 8.5a for the record of SBPP operations during the ambient survey, including this part of the survey record). The noise levels during these hours were the highest recorded during the December 2005 ambient survey, so this timeframe was chosen as a demonstrated worst-case situation.

The results of this SBPP synthesizing effort are shown in Figure 8.5-4 that depicts the synthesized SBPP-only noise level contours at the 115-acre industrial site and into the adjoining community. In this figure, the AFC ambient measurement locations are given in red, while the planning zones for the BFMP Program are outlined in green.

The figure shows that the synthesized noise level contribution from the SBPP, in and of itself in the absence of any other noise sources, is calculated to be approximately 60 dBA at the eastern site boundary, 55 dBA around the intersection of Industrial Boulevard and J Street (near measurement location AFC-1), and 50 dBA well into commercial and residential areas east of Industrial Boulevard. Bear in mind, however, that actual ambient survey field notations indicated that the SBPP was inaudible at all locations east of the I-5 at all times of the day, evening, and night. Thus, even with the highest measured daytime noise emissions, the SBPP is not a contributor to the noise environment on the east side of the I-5 freeway.

The comparison of measured noise levels, as acquired during the December 2005 ambient survey, to the synthesized noise contributions from the SBPP is given in Table 8.5-10, along with an assessment of how much the SBPP is influencing these measured levels.

TABLE 8.5-10
Comparison of Synthesized SBPP Noise Contributions to Measured Ambient Noise Environments

Location	Brief Description	Total Measured Existing Noise Environment, dBA[a]	Synthesized SBPP Contributions, dBA[b]	Calculated contributions of all other sources, dBA (subtract column 4 from column 3)	Judgment of SBPP's influence
Community Measurement Locations					
AFC-1	Colorado Street Apts	65 – 67	53	65 – 67	SBPP is negligible
AFC-2	Brentwood Trailer Park, I-5 side	63 – 65	53	63 – 65	SBPP is negligible

TABLE 8.5-10
Comparison of Synthesized SBPP Noise Contributions to Measured Ambient Noise Environments

Location	Brief Description	Total Measured Existing Noise Environment, dBA[a]	Synthesized SBPP Contributions, dBA[b]	Calculated contributions of all other sources, dBA (subtract column 4 from column 3)	Judgment of SBPP's influence
AFC-3	Brentwood Trailer Park, Industrial Blvd side	54 – 59	52	50 – 58	(SBPP is negligible)[c]
AFC-4	Harborside Elem. School	56 – 60	49	55 – 60	SBPP is negligible
AFC-5	Stella Street	59 – 65	45	59 – 65	SBPP is negligible
AFC-6	1021 Bay Blvd	64 – 67	55	63 – 67	SBPP is negligible
AFC-11	Marina View Park	55 - 59	54	48 – 57	SBPP is roughly comparable to other sources
On-site measurement Locations (used to calibrate synthesis SBPP-only model)					
AFC-7	*SBPP site; south of plant*	*65*	*66*	*<56*	*SBPP dominates*
AFC-8	*SBPP site; east of plant*	*66 – 67*	*67*	*<57*	*SBPP dominates*
AFC-9	*SBPP site; NE of plant*	*61 – 64*	*59*	*59*	*SBPP is roughly comparable to other sources*
AFC-10	*SBPP site; north of plant*	*62 – 65*	*64*	*<54*	*SBPP dominates*

Source: Alliance Acoustical Consultants, Inc., 2006

Notes:

[a] Approximate range of 15-minute L_{eq} values.

[b] These levels are possible at any time of the day or night, depending on which SBPP units are running and to what power loading.

[c] although the levels are roughly comparable, judgment of being negligible is based on large swings in measured data and on field observations of not being able to discern power plant noise at any time.

In short, although the projected noise level contours for only the SBPP noise contributions appear to cover a large area (with respect to the City of Chula Vista ordinance nighttime limits of 50 and 45 dBA for multi-family and single-family residential zones, respectively), the existing plant actually has little or no influence on the observed ambient conditions in Chula Vista; particularly on the east side of the I-5 freeway. This result is primarily due to the significant traffic-related noise sources in and around the area (including the I-5 freeway, Bay Boulevard, Industrial Boulevard, Palomar Street, and L Street).

8.5.5 Environmental Consequences

The proposed SBRP will produce noise that may be noticeable at some nearby locations on the west side of the I-5 freeway, but the noise levels will fall within the levels included in Chula Vista's Noise Ordinance.

Prior to commercial operations, noise will also be produced at the SBPP/SBRP sites during the construction and demolition phases of the project. Potential noise impacts from construction, demolition, start-up, and operation activities are assessed in this subsection.

8.5.5.1 Significance Criteria

The City has established quantitative standards for determining appropriate noise levels for various zoning districts. Noise impacts may be considered significant if project operational activities conflict with the Noise Level Limits by Zoning District summarized in Table 8.5-5.

In addition to the City criteria, the CEC has a criterion that a potential for a significant noise impact exists where the noise of a project during operations exceeds the background noise by 5 dB or more at residential receptors (CEC, 2002). It is important to note that the potential for an impact does not mean that there is an impact. Rather, it means that the project noise levels need further evaluation.

Also, the CEC maintains that demolition/construction noise is typically insignificant if (1) the construction activity is temporary, (2) use of heavy equipment and noisy activities is limited to daytime hours, and (3) all feasible noise abatement measures are implemented for noise-producing equipment (CEC, 2002).

8.5.5.2 Construction and Demolition Impacts

This subsection addresses the various components of construction noise and vibration.

8.5.5.2.1 Worker Exposure to Noise

Worker exposure levels during the demolition and construction phases of the SBRP will vary depending on the phase of the project and the proximity of the workers to the noise-generating activities. Hearing protection will be available and its use will be enforced for workers and visitors, as needed, throughout the duration of the construction/demolition period. A Hearing Protection Plan, which complies with Cal-OSHA requirements, will be incorporated into the Health and Safety Plan.

8.5.5.2.2 General Demolition and Construction Noise

Demolition and construction activities on the industrial site are expected to be typical of other power plants in terms of schedule, equipment used, and other types of activities. Since the Project involves a replacement plant, there will be a combination of demolition and construction activities to support building the SBRP, followed by the demolition of the existing SBPP facility. The SBRP construction schedule is anticipated to be approximately 25 months in duration, but it will be 'book-ended' by the demolition activities; associated both with SBRP site preparation and SBPP demolition (see Section 2.0 – Project Description for more details on the demolition and construction phasing and timetables).

The noise levels from demolition and construction activities will vary during the different activity periods, depending upon the activity location(s) and the number and types of equipment being used. Both the U.S. EPA Office of Noise Abatement and Control and the

Empire State Electric Energy Research Company have extensively studied noise from individual pieces of construction equipment as well as from construction sites of power plants and other types of facilities (U.S. EPA, 1971; Barnes et al., 1976). Although these studies were done several years ago, they remain the industry standards for the estimated base noise emissions from construction/demolition equipment and the associated noise impact analysis. Further, use of this data is considered to be conservative since the evolution of construction equipment has been toward quieter designs to protect both operators from exposure to high noise levels and the community from undue noise intrusion.

Table 8.5-11 presents noise levels from common construction equipment at various distances. Note that these typical noise levels at distances away from the equipment item (beyond 50 feet) are conservative since the only attenuating mechanism considered was divergence of the sound waves in open air. Attenuation from air absorption, ground effects, and shielding from intervening topography or structures are not included in the calculations.

TABLE 8.5-11
Noise Levels from Common Construction Equipment at Various Distances

Construction Equipment	Typical Sound Pressure Level at 50 feet (dBA)	Typical Sound Pressure Level at 500 feet (dBA)	Typical Sound Pressure Level at 1,500 feet (dBA)
Dozer (250-700 hp)	88	68	58
Front End Loader (6-15 cu. yards.)	88	68	58
Trucks (200-400 hp)	86	66	56
Grader (13 to 16 ft. blade)	85	65	55
Shovels (2-5 cu. yards.)	84	64	54
Portable Generators (50-200 kW)	84	64	54
Derrick Crane (11-20 tons)	83	63	53
Mobile Crane (11-20 tons)	83	63	53
Concrete Pumps (30-150 cu. yards.)	81	61	51
Tractor (3/4 to 2 cu. yards.)	80	60	50
Un-quieted Paving Breaker	80	60	50
Quieted Paving Breaker	73	53	43

Source: USEPA, 1971; Barnes et al., 1976.

For the demolition and construction noise impact analyses (discussed separately below), the worst-case periods of activity were investigated to calculate their respective noise emissions into the surrounding community. The analyses used the same receptor locations as were used for the ambient survey, as well as additional locations, mostly to the west of the 115-acre industrial site, to evaluate potential impacts to biological habitat areas (primarily at the Chula Vista Wildlife Preserve on a spit of land in San Diego Bay). These receptor locations for the construction and demolition analysis are shown on Figure 8.5-5.

8.5.5.2.3 Project Demolition Noise.

For the demolition process, three distinct phases have been identified; Phase I is primarily aimed at preparing the 12.9 acres allocated for the proposed SBRP, Phase II (implemented after SBRP achieves commercial operations) is focused on removing the bulk of the existing SBPP, and Phase III will be removing other industrial site features and conducting the final grading on the industrial site that is not part of the SBRP area. These functions, currently planned to be conducted over a single, daytime shift only, are summarized below:

Phase I Demolition

- remove LNG Tank foundations (on SBRP site)
- remove South Tank Farm Eastern Berm area

Phase II Demolition

- remove SBPP structure
- remove remaining support structures
- remove support tanks/equip. (former Waste Water Treatment Plant)
- remove South Tank Farm Tanks & Berms
- remove Intake and Discharge Structures
- remove the East/West Utility Loop
- remove the Jet Fuel Site

Phase III Demolition

- remove existing Waste Water Treatment Plant
- remove North Tank Farm Berms
- conduct final grading

The demolition will not involve blasting, but will utilize standard demolition techniques and pavement/foundation breaking equipment. Since some of the demolition activities will last upwards of 25 months, several actions will be conducted concurrently with activities being dispersed in several locations about the 115-acre industrial site. Therefore, several combinations of activities were evaluated to ensure assessment of the worst-case conditions at the pertinent receptor locations. That is, the worst-case situation may be at two or three of the receptor sites for one aspect of the demolition program, while another aspect may produce the highest noise levels at a completely different subset of the receptors.

These various permutations of activities which will overlap in time and in several areas on the two industrial sites, a detailed investigation was conducted, as detailed in Noise Appendix 8.5b. The results of this detailed demolition evaluation indicate that there could be variations in noise levels at any given receptor, depending on the timeframe of the overall demolition program. For example, at Location AFC-11, the Marina View Park, demolition noise levels are predicted to range from 44 to 64 dBA, depending on the particular phase of the demolition. During Phase I (most work at the SBRP site to the south, the large distances involved – 3,300 to 4,100 feet – would yield demolition noise level that would be well below the existing ambient. Conversely, for Phase III activities (some centered at the North Tank Farm area which is the closest zone of demolition activity), noise levels could be upwards of 64 dBA at the Park during the daytime since earth moving

equipment could be approximately 920 feet away. The largest difference in potential noise levels to an off-site receptor location from demolition is at South-b, which is a narrow walkway separating salt evaporation ponds, and which is due west of the center of the SBRP site preparation zone.

The noise level predictions for the various phases of the demolition activities are collapsed into the following summary table that give the worst-case predicted demolition noise levels at each recapture location (regardless of which phase or activity was responsible for that highest noise level).

TABLE 8.5-13
Comparison of Predicted Noise Levels from South Bay Demolition Activities to Existing Ambient Sound Levels

Receptor Label	Receptor Description[a]	Highest Predicted Demolition A-wtd Sound Level, dBA	Measured Existing Ambient Daytime L_{eq} Noise Level[b], dBA	Difference between Demolition Noise and Ambient, dB
Community Receptor Locations (inhabited)				
AFC-1	Colorado Apts	43	68	-25
AFC-2	Brentwood, I-5	42	64	-22
AFC-3	Brentwood, Ind. Blvd	36	59	-23
AFC-4	Harborside Elem.	38	58 - 64	-19 to -25
AFC-5	Stella Street	37	63	-26
AFC-6	1021 Bay Blvd	61	67	-6
AFC-11	Marina View Park	64	57	+7
North-a	SE corner of Marina land	56	55	+1
Potential Biological Habitats				
West-a	Spit access, 1000’	69	58	+11
West-b	Spit access, 2000’	62	55[c]	+7
West-c	Spit habitat, 3000’	59	51	+8
South-b	Inner Evap pond trail, 2000’	67	58	+9
South-c	Inner Evap pond trail, 3000’	62	55[c]	+7
SE-a	Outer Evap pond trail, 1000’	70	60[c]	+10
SE-b	Outer Evap pond trail, 2000’	62	60[c]	+2
SE-c	Outer Evap pond trail, 3000’	59	55[c]	+4

Source: Alliance Acoustical Consultants, Inc., 2006

Notes:

[a] Some receptor locations (AFC-7, -8, -9, -10, and South-a) are areas to be demolished, so this analysis is not applicable at these locations.

[b] nominal, average Leq value across the daytime hours.

[c] estimated value from similar locations and conditions.

As shown in this table, the majority of inhabited receptor locations are expected to have demolition-related noise levels that are well below the existing ambient conditions. As such, demolition activities would be generally inaudible at these community locations (AFC-1, -2, -3, -4, -5, and -6) with the possible exception of brief times of possible discernibility during the busiest periods of activity that happen to coincide with lulls in local and freeway traffic. These brief periods of perceptibility are not considered significant, based on the intermittent nature and short-term duration (75 days) of the worst-case activities.

Receptor locations to the north of the industrial site, AFC-11 and the SE corner of the Marina (North-a)[5] are predicted to have potentially noteworthy increases in noise levels due to the proximity of Phase III demolition activities (for removing the North Tank Farm Berms). While these worst-case demolition noise levels may be clearly audible, as compared to the current ambient conditions, the short-term nature of these activities (approximately 100 days) and their limitation to daytime hours (per City of Chula Vista Code, Sections 17.24.050 and 19.68.060) indicates that these demolition noise levels would not be considered significant.

8.5.5.2.4 SBRP Plant Construction Noise

As opposed to the demolition activities that will be spread out over a large portion of the 115-acre industrial site, the SBRP construction process will be centered around the power block of the new plant, a relatively small area as compared to the demolition scope, and will be conducted over approximately 28 months (and which may change, depending on the possible use of two shifts for construction activities). Since the construction zone is relatively small, a single centroid was used to define the aggregate equipment noise for the construction noise evaluations. The specific mix of equipment that is expected to be used during the construction program was provided by Black and Veatch (as discussed in Section 2.3.18.1). Rather than divide the construction activities for the SBRP into phases (as with the demolition program above), this aspect of the SBRP Project was simply laid out in terms of expected construction equipment to be used at any given time during the month-to-month execution of the SBRP building program (see Tables 2-8 and 2-9).

These monthly equipment sets were located at the centroid of the SBRP power block, their aggregate noise levels were calculated, and attenuation factors for spreading loss and for barrier effects were used to compute the expected, worst-case noise levels at each receptor location. The analyses indicated that the worst-case situation would occur in either month 12, 13, 14, and/or 15[6]. The results of this worst-case analysis are given in Table 8.5-14 which compares the predicted construction noise levels at each receptor location to the existing ambient noise environment. More details on the analysis methodologies and techniques are contained in Appendix 8.5b.

[5] Note that per the Chula Vista Planning Division, Marina activities are governed by the Port, including the allowance of living aboard-ship while tied up in the Chula Vista Marina (Provencher, 2006). Although these 'live-aboards' may be considered as a pseudo-residential usage, the same assessment of and conclusions for demolition noise impacts applies.

[6] Note that aggregate noise levels from other months' activities for SBRP construction were found to be within 1 or 2 dB of these highest levels during months 12 – 15. This included the first five months of the construction schedule wherein the primary noise emissions involve trucking movements for material haul-in and fill activities. See Appendix 8.5b for further details.

TABLE 8.5-14
Comparison of Predicted Noise Levels from SBRP Construction Activities to Existing Ambient Sound Levels

Receptor Label	Receptor Description[a]	Highest Predicted Construction A-wtd Sound Level, dBA	Measured Existing Ambient Daytime L_{eq} Noise Level[b], dBA	Difference between Construction Noise and Ambient, dB
Community Receptor Locations (inhabited)				
AFC-1	Colorado Apts	39	68	-28
AFC-2	Brentwood, I-5	44	64	-20
AFC-3	Brentwood, Ind. Blvd	37	59	-22
AFC-4	Harborside Elem.	40	58 - 64	-18 to -24
AFC-5	Stella Street	40	63	-23
AFC-6	1021 Bay Blvd	65	67	-2
AFC-11	Marina View Park	46	57	-11
North-a	SE corner of Marina land	45	55	-10
Potential Biological Habitats				
West-a	Spit access, 1000’	61	58	+3
West-b	Spit access, 2000’	58	55[c]	+3
West-c	Spit habitat, 3000’	56	51	+5
South-b	Inner Evap pond trail, 2000’	71	58	+13
South-c	Inner Evap pond trail, 3000’	66	55[c]	+11
SE-a	Outer Evap pond trail, 1000’	63	60[c]	+3
SE-b	Outer Evap pond trail, 2000’	61	60[c]	+1
SE-c	Outer Evap pond trail, 3000’	60	55[c]	+5

Source: Alliance Acoustical Consultants, Inc., 2006

Notes:

[a] Some receptor locations (AFC-7, -8, -9, -10, and South-a) are areas to be demolished, so this analysis is not applicable at these locations.

[b] nominal, average Leq value across the daytime hours.

[c] estimated value from similar locations and conditions.

As shown in this table, the majority of inhabited (community) receptor locations are expected to have construction-related noise levels that would be generally inaudible at these community locations (AFC-1, -2, -3, -4, -5, -11, and North-a) with the possible exception of brief times of possible discernibility during the busiest periods of activity that happen to coincide with lulls in local and freeway traffic. These brief periods of perceptibility are not considered significant, based on the intermittent nature and short-term duration of the worst-case activities.

Location AFC-6, being closest to the SBRP Project site, may experience construction noise that roughly comparable to the ambient noise levels during the busiest periods of activity.

These levels may be intermittently audible to the commercial/light industrial tenants, but are not considered significant, based on the sporadic nature and short-term duration of the worst-case activities.

The highest noise level increases from SBRP construction activities (+1 to +11 dB) would be at uninhabited areas to the west (i.e. the salt ponds and demarcation berms).

In summary, the worst-case construction noise levels would be just below or well below the existing ambient at the majority of inhabited receptor locations. At some locations that are proximate to the SBRP site (to the west, primarily), construction noise is expected to be clearly audible, as compared to the current ambient conditions. However, due to the lack of inhabitants, the short-term nature of these activities, and their limitation to daytime hours (per City of Chula Vista Code, Sections 17.24.050 and 19.68.060), these construction noise levels would not be considered significant.

8.5.5.2.5 SBRP Plant Start-up and Commissioning Noise

Once the plant construction is completed, the Project will move into the start-up and commissioning phase in preparation of licensed operations. Other than the operations of some or all of the plant equipment, working up to a normal, full-load configuration, the major noise sources during start-up and commissioning involve air and steam venting and other discharges. The vast majoring of discharges and ventings are related to line cleaning of the process piping to remove foreign objects, welding slag, dirt, and other debris that may have found its way into the piping during plant construction. This line cleaning is most often done using pressurized steam. Although commissioning and initial start-up only lasts a few weeks between the end of construction and the beginning of long-term, normal operations and although line-cleaning venting only occurs during this relatively short-lived phase of a plant's life cycle, the frequency, length, and noise intensity of discharges and ventings can be significant. Therefore, temporary vent silencers are often used during this period to reduce the discharge noise levels.

In addition to the above planned and controlled line cleaning discharges, the Commissioning and Initial Start-up Phase can also include steam releases from a 'trip'[7] of a Gas Turbine (GTG), Steam Turbine (STG), or HRSG train. The frequency, duration, and magnitude of these tripping discharges is highly variable, depending on the particular plant conditions at the time. Since these trip-related discharges occur primarily during the few weeks of the initial start-up phase, and are typically brief, these discharge vents are not typically silenced due to the relatively short-lived usage.

To summarize, typical commissioning and initial start-up activities and related operations will generate significant, but intermittent noise levels. Some of these discharges (steam blow line cleaning), given their continuous or near-continuous duration, are typically silenced to reduce the noise in the community to insignificant levels. However, because of the nature of this phase, other venting operations (trips and PSV discharges) may be quite discernible and could be a potential source of annoyance. These potential annoyances would be short-term and, thus, would be experienced intermittently and only temporarily during Commissioning and Initial Start-up and are, therefore, not expected to result in significant impacts, based on the criteria thresholds.

[7] A 'trip' is the shut-down of a system due to process upset conditions.

8.5.5.2.6 SBRP Emergency Situation Noise

Following start-up and commissioning, a specialized 'tripping' discharge is due to emergency pressure safety valve (PSV) discharges. PSV vents are almost never silenced since their operation is critical to protecting the plant and a silencer may hamper the proper operation of the safety valve. Thus, to protect the integrity of the plant and to protect all on-site personnel (from a major plant disaster), PSV vent discharges are not silenced or are partially silenced. However, steam by-pass systems are designed into modern power plants such that these types of emergency pressure overages can be successfully managed, thereby making PSV discharges a rare event.

These rare, emergency-related PSV discharge events can produce high noise levels at the discharge point. Although these source levels would carry into the community such that outdoor receptors within approximately 3,000 feet of the plant could experience clearly audible noise levels, the trip-related and emergency-related PSV discharges occur rarely and typically lasting less than 60 seconds. Given the infrequency and short duration of these emergency discharges, the increases in ambient community noise levels would result in adverse but less than significant impacts.

8.5.5.2.7 Construction Vibration

The main source of vibration during any kind of industrial construction is normally taken to be from pile driving activities. Standard pile installation involves impacting each pile with a large weight or hydraulic ram; much like using a hammer to pound a nail into wood. This technique can generate significant ground-borne vibration levels' depending on the soil characteristics and proximity of vibration-sensitive receptors.

However, the applicant has chosen to use auger cast piles, which are more analogous to drilling a hole into a piece of wood and filling it with putty. Vibration levels for auger cast piling are typically from 20 to 30 (and may be up to 50) decibels lower than standard hammering techniques (Thorburn Associates, 1993). As such, and given the relatively long distances for ground-borne vibration to propagate to the nearest receptor (the commercial building represented by AFC-6), the use of auger cast pile installation is expected to result in immeasurable vibration levels at any off-site receptor. Thus, this aspect of the construction will comply with the City of Chula Vista standards (found in Civil Code Sections 19.66.080 and 19.66.060) and potential construction vibration impacts are considered to be less than significant and no additional mitigation is required.

8.5.5.3 Operational Impacts

This subsection describes the expected noise impacts from operation of the plant.

8.5.5.3.1 Worker Exposure to Operational Noise

Nearly all components of the Project will be specified not to exceed near-field maximum noise levels of 90 dBA at 3 feet (or 85 dBA at 3 feet where available as a vendor standard). Since there are no permanent or semi-permanent workstations located near any piece of noisy plant equipment, no worker's time-weighted average exposure to noise should approach the level allowable under OSHA guidelines. Nevertheless, signs requiring the use of hearing protection devices will be posted in all areas where noise levels commonly exceed 85 dBA, such as inside acoustical enclosures. Outdoor levels throughout the plant

will typically range from 90 dBA near certain equipment to roughly 65 dBA in areas more distant from any major noise source.

8.5.5.3.2 Transmission Line and Substation Noise Levels

Construction of the SBRP and relocation of the South Bay Substation will be phased as described in Section 5.0. Noise impacts are based on the full built-out condition, i.e. with the site fully developed with both SBRP and the relocated South Bay Substation constructed and operational.

Noise from energized transmission lines is exhibited via a humming noise caused by the corona effect, which is basically a localized ionization of air around the transmission line. Corona noise is generally a principle concern with transmission lines of 345 kV and higher. The Project's main voltages of 230 kV, 138 kV, and 69 kV, plus the use of shielded solid dielectric cable encased in an underground concrete duct bank will eliminate many corona effects. Further, the Project's above-ground cabling is not expected to contribute significantly to the existing corona potential from the high-voltage transmission lines that are in the 300 foot SDG&E easement immediately east of the SBRP site. Consequently, no noise impact is expected from the operation of the SBRP electrical transmission lines.

Since the project will be using the existing South Bay Substation during the interim phase, this substation will continue to produce some levels of noise associated with the energized equipment. However, with the shutdown of the SBPP, the amount of energized equipment is expected to be less than is currently utilized, so noise levels during the interim period resulting from operations of the SBRP Project are expected to be less than the current substation noise emissions. After SDG&E builds out the final substation configuration (to the south of the SBRP Project), noise levels from energized equipment may increase slightly, as compared to the interim substation configuration, but this final substation configuration is expected to have switchrack equipment at more than 230 feet away from the nearest receptor; the commercial tenants in the Bayside Industrial Park. Further, the nearest residential receptor (represented by location AFC-5) is over 1,650 feet from the envisioned substation. As such, the expected final configuration substation is located far enough away from both commercial and residential receptors that is it not expected to generate noise that will be significant.

It should be noted that for this AFC noise analysis, all envisioned significant noise sources (i.e. primarily transformers) expected to be inside the SDG&E substation – regardless of whether they are part of this SBRP Project or part of a future SDG&E project – were included in the noise modeling as a worst-case analysis of the envisioned total future build-out configuration (as discussed below in section 8.5.5.3.5 below).

8.5.5.3.3 Process Water Supply Pipeline and Water Pump Station Noise Levels

Operational noise from the buried process water supply pipeline is not anticipated to generate any noise. The water pump station will be designed to comply with the City's noise requirements and is not anticipated to increase offsite noise level by a measurable amount.

8.5.5.3.4 Natural Gas Supply Pipeline and Fuel Gas Compressor Station Noise Levels

Likewise, operational noise from the buried fuel gas supply pipeline is not anticipated to generate any audible noise. The fuel gas compressor station will be inside of an acoustically

treated building and will be designed to limit gas system noise emissions such that the SBRP Project will comply with the City's noise requirements.

8.5.5.3.5 Plant Operation Noise Levels

After completion of construction, future SBRP noise levels will reflect the modernization of the industrial site. Specifically, the quieter new combined-cycle unit will begin operation and the louder, existing SBPP will be dismantled. To evaluate the noise environments associated with the SBRP Project, the Applicant has undertaken an extensive noise prediction study to identify and incorporate special design features that will be added to the Project to help control noise emissions.

A noise model of the proposed SBRP has been developed based on the plant layout configurations and equipment information for the proposed facility. The noise model used source input levels derived from manufacturers' data, field surveys of similar equipment, and past experience with many comparable power plant projects. The noise emissions from the plant have been calculated at the residential receptors of potential concern. The noise levels presented represent the anticipated steady-state level from the plant with essentially all equipment operating at full-load conditions.

Specifically, the study focused on the potential noise generated by the proposed two trains of gas-fired combustion turbines (General Electric Frame 7FA's), two heat recovery steam generators (HRSG's), one train of steam turbine generator (STG) with steam condensers, as well as several large water pumps, three main power transformers, and other associated process and support equipment. The details of the modeling process are discussed in Appendix 8.5c.

The model divides the proposed facility into a list of individual point and area noise sources representing each piece of equipment that produces a significant amount of noise. The sound power levels representing the standard performance of each of these components are assigned based either on field measurements of similar equipment made at other existing plants, data supplied by manufacturers, or information found in the technical literature. Using these sound power levels to define the individual sources, the model calculates the sound pressure level that would occur at each defined receptor from each source given a set of sound propagation factors and attenuation effects that have been adopted from industry standards. These attenuation and reduction factors include losses from distance, air absorption, ground attenuation effects, and intervening barriers (both building and topography) are considered. The sum of all these individual source levels, after incorporating the propagation terms, is the total plant level at the selected receptor location. More details concerning the inputs and methodologies of the predictive noise modeling analyses are contained in Noise Appendix 8.5c.

The new combined-cycle plant was modeled as a partially-enclosed plant. That is, the turbines (gas and steam) are currently planned to be inside of an L-shaped turbine building. This building will serve as an aesthetic feature for the plant, but it will also provide acoustical benefits in substantially containing the turbine, generator, and related equipment noise. This building was modeled as both a set of noise sources (noise radiation from the walls and HVAC openings) and as a set of barriers. Other major Project buildings, including the Administration Building and the Warehouse Building were also included as sound barriers. The Project also currently includes localized barrier walls around all three main transformers

to limit their noise emission into the community. Lastly, barrier effects were included for the commercial buildings across Bay Boulevard and to the south of the Project site.

To be conservative, however, partial shielding from other intervening buildings and man-made barriers (such as the elevation changes around the freeway) throughout the city was not used. In addition, for conservatism, attenuation due to vegetation (e.g. trees and ground cover, both existing and future) was not considered. Lastly, as is standard practice in the description of environmental noise, stable atmospheric conditions were assumed (suitable for reproducible measurements and that are favorable for noise to travel greater distances). These inherent conservative factors and assumptions result in a noise model that tends be biased to higher predicted values than would be expected in the actual environment around the SBRP.

The modeling study was based on the conservative scenario that the entire new SBRP could operate at maximum loads for an entire 24-hour period. This assures SBRP will comply with CEC noise control requirements and Chula Vista city noise ordinance requirements at all hours of the day and night.

The modeling effort was repeated in an iterative fashion to analyze increasingly quiet configurations of plant equipment until a plant design was arrived at that resulted in compliance with both the City's and the Commission's significant impact thresholds. These compliant noise levels were achieved using the following extensive array of design features:

- Selecting an effective plant layout for noise control concerns
- Low-noise Main Transformers, along with localized sound barrier walls
- Extensive Baffles on the HRSG Exhaust Ducts
- A Shroud Enclosure around the transition between the GTG Exhaust Duct and the HRSG Inlet
- Noise control wall plate design on the HRSG Casing Walls
- Low-noise Steam System Vents, Tanks, and Piping on the HRSG penthouse
- Low-noise Boiler Feedwater Pump Trains (low-noise motors and noise control blanketing on the pumps)
- Enclosing as much noisy equipment as practical within the Turbine Buildings
- Acoustical properties on all GTG and STG Turbine Building elements (above and beyond a typical industrial building for this climate zone), including acoustical wall panel construction, ventilation silencers, noise control doors, and quiet HVAC equipment.

Compliance with each standard is discussed briefly below.

CEC Requirement (+5 dB criterion)

The CEC has determined that a significant noise impact may occur if operational noise from a new facility increases existing late night L_{90} noise levels by 5 or more dB at nearby

residential areas (Baker, 1999). The results of the modeling described above as it relates to the CEC criterion are presented in Table 8.5-15.

It should be noted in this table that at the four nearest residential receptor locations, noise from the existing SBPP was not audible, much less measurable, during any period of the day, evening, or night (with the only exception of AFC-5, Stella Street, wherein a faint fan whine, attributed to the SBPP, was barely discernible in the late evening hours, but it was judged to be immeasurable at all observation times). Thus, it is a moot point as to the future noise environment in the absence of the existing SBPP (which will be taken out of service as part of the SBRP Project) as the noise conditions at the closest residential receptors are being dominated by sources other than SBPP and its removal would not lower these future residential conditions. As this table indicates, noise increases due to the SBRP Project will be less than 5 dB at all of the surrounding residential locations; even with respect to the lowest, late-night residual (L90) noise metric. The Project will therefore not cause a significant noise impact and is in compliance with the CEC's impact threshold criterion.

Chula Vista Noise Ordinance

The City of Chula Vista noise level limits for stationary sources were presented in Table 8.5-5. The pertinent and most restrictive levels with respect to the SBRP Project (assuming the capability of full-load operations around the clock) are the nighttime limits for Single-Family Residential zones (hourly Leq of 45 dBA), for Multi-Family Residential zones (hourly Leq of 50 dBA), and for Commercial zones (hourly Leq of 60 dBA). It is important to bear in mind that these values are the nominal noise level limits. Per Chula Vista Municipal Code Section 19.68.030, Subsection B ("Corrections to Exterior Noise Level Limits"), paragraph 4: "If the measured ambient levels exceeds that permissible in Table III [i.e. reproduced in AFC Table 8.5-5], the allowable noise exposure standard shall be the ambient noise level." Since the ambient survey demonstrated that the existing conditions around the Project site are higher than the Municipal Code-assumed limits, then the Table 8.5-5 limits are to be adjusted to match those measured ambient levels; thus becoming effective noise level limits.

These effective noise level limits, which are the pertinent standards in this situation, must be met at the receiving land use property boundary. Results of the modeling described above, as they relate to both the nominal and effective Chula Vista Noise Standards are presented in Table 8.5-16. The impact assessment relative to the pertinent effective receptor property noise limits are shown in bold type in this table.

As this table indicates, the Chula Vista Noise Standards will be met at surrounding sensitive land uses, given the existing ambient noise environments, which are often considerably higher than the nominal noise level limits. Therefore, the Project will comply with the Chula Vista Noise Standards. These compliant conditions are graphically given in Figure 8.5-6, which shows the predicted noise level contours for the SBRP contribution into the surrounding city areas.

TABLE 8.5-15
Comparison of Predicted Noise Levels from SBRP Operations to Existing Ambient Sound Levels, with respect to the CEC's +5 dB criterion.

Receptor Label	Receptor Description[a]	Measured Existing Ambient Nighttime L_{90} Noise Level[b], dBA	CEC Effective Plant Allowance (column 3 + 5 dB)	Predicted SBRP Operations Noise Contributions, dBA	Total Future Noise Environment (SBRP plus existing L_{90}), dBA	Difference between total future environment and CEC criterion, dB
AFC-1	Colorado Apts	51	56	41	51	5 dB under limit
AFC-2	Brentwood, I-5	50	55	46	51	4 dB under limit
AFC-3	Brentwood, Ind. Blvd	43	48	43	46	2 dB under limit
AFC-5	Stella Street	43	48	40	45	3 dB under limit

Source: Alliance Acoustical Consultants, Inc., 2006

Notes

[a] Dec 2005 Ambient Survey Locations that are not residential areas (and, therefore, not relevant to this comparison) are not listed.

[b] average-lowest L_{90} value during the nighttime hours, including operations of the SBPP.

TABLE 8.5-16
Comparison of Predicted Noise Levels from SBRP On-Going Operations to City of Chula Vista Noise Level Limits

Receptor Label	Receptor Description[a]	Measured Existing Ambient Nighttime L_{eq} Noise Level, dBA	City of Chula Vista Land Use Type	Predicted SBRP Operations Noise Contributions, dBA	NOMINAL City of Chula Vista Nighttime Noise Level Limit, Hourly L_{eq}, dBA[b]	Difference between total future environment and Chula Vista NOMINAL Limit, dB	Predicted SBRP Operations Noise Contributions, dBA [repeat of column 5]	EFFECTIVE City of Chula Vista Nighttime Noise Level Limit, Hourly L_{eq}, dBA[c]	Difference between total future environment and Chula Vista EFFECTIVE Limit, dB
Existing Community Locations subject to City of Chula Vista Municipal Code									
AFC-1	Colorado Apts	55	SFR	41	45	4 dB under limit	**41**	**55**	**14 dB under limit**
AFC-2	Brentwood, I-5	56	SFR	46	45	1 dB over limit	**46**	**56**	**10 dB under limit**
AFC-3	Brentwood, Ind. Blvd	47	SFR	43	45	2 dB under limit	**43**	**47**	**4 dB under limit**
AFC-5	Stella Street	49	SFR	40	45	5 dB under limit	**40**	**49**	**9 dB under limit**
AFC-6	1021 Bay Blvd	56	Comm'l	53	60	7 dB under limit	**53**	**60**	**7 dB under limit**
Existing Community Locations within the City of Chula Vista, but with no specific noise level limit given in the Municipal Code									
AFC-4	Harborside Elem.	49	School	39	None	Not applicable	39	None	Not applicable
AFC-11	Marina View Park	49	Recreational	37	None	Not applicable	37	None	Not applicable
Potential, Future Receptor as part of BFMP that *may* be subject to City of Chula Vista Municipal Code									
AFC-9	SBPP site, NE of Plant	55	MFR	43	50	7 dB under limit	**43**	**52[d]**	**9 dB under limit**

Source: Alliance Acoustical Consultants, Inc., 2006

Notes:

[a] Dec 2005 Ambient Survey Locations that are not residential areas (and, therefore, not relevant to this comparison) are not listed.

[b] Chula Vista noise level limits as written into the Municipal Code.

[c] Allowance in the Chula Vista Municipal Code for situations wherein the existing ambient noise is higher than the as-written limit.

[d] assuming equal contributions during the late night hours from SBPP and all other sources. Thus, the existing ambient without the SBPP during the nighttime would be 52 dBA $L_{eq\text{-}hr}$

In summary, since the Project complies with the pertinent Chula Vista noise levels as well as the CEC's guidelines, it can be concluded that there are no residences, hospitals, libraries, schools, places of worship or other facilities where quiet is an important attribute of the environment where there is a potential significant impact from noise levels resulting from the Project's operations.

Beyond regulatory compliance, the new SBRP, as a modern power plant facility, will be quieter than the existing SBPP. This will yield daytime noise levels that are the same or lower at all locations around the City of Chula Vista; even taking into account the different locations of the two facilities. For example, even though the SBRP is closer to location AFC-6 than the existing SBPP, the quieter total plant noise emissions from the SBRP are expected to be comparable to the current noise emissions from the farther-away SBPP.

This comparison between the noise contributions from the existing SBPP and the proposed SBRP is illustrated in Figure 8.5-7, which depicts the noise level positive differences (i.e. benefits) between the synthesized SBPP contours and the predicted SBRP contours. That is, in the absence of all other sources, by mathematically subtracting the SBRP noise contributions from the SBPP noise contributions, this figure shows the resulting differences (in terms of improved noise environments).

In looking at particular areas on the figure, it can be seen that near the existing plant, future noise levels are analyzed to be 20 to 25 dB quieter than current conditions (as the SBPP will no longer be making noise). Likewise, areas to the north (such as in and around the Marina View Park) and to the west (such as along the accessway and in the wildlife habitat area), are predicted to have noise levels that are 15 dB or even quieter in the future during SBRP operations, as compared to current SBPP operations. The threshold between future benefits (i.e. the zero dB line) is predicted to be approximately along the SBRP site boundary to the north, east, and south, while this line is shown to run through the salt evaporation ponds to the west.

In this analysis, inhabited areas to the east of the I-5 freeway are predicted to experience benefits (i.e., reductions in noise levels) of 5 to 10 dB or more. In light of the additional, real-world sources (freeway, roadway, railway sources), however, then the proposed SBRP noise contributions can be expected to be less audible by that 5 to 10 dB margin than the existing SBPP, which was demonstrated to be indiscernible at all hours of the day and night.

Relating these noise level difference curves back to the original predicted sound level contour maps (Figure 8.5-4 for SBPP alone and Figure 8.5-6 for SBRP alone), the area predicted to be within the 55 dBA sound level contour on each figure was calculated. For the SBPP, the 55 dBA contour was found to encapsulate approximately 284 acres, while the area within the same noise level contour for the SBRP project was only approximately 50 acres. This is another way to look at the quieter SBRP (as compared to the SBPP) in terms of the improved noise situation that will result from the proposed project.

This general improvement in noise conditions will occur while allowing for comparable power generation capabilities (by replacing SBPP with SBRP), but with much increased reliability and longevity, thereby creating greater stability in the California power grid and less chance of power outages in the San Diego and southernmost regions of California.

8.5.5.3.6 Tonal Noise

As a general rule, combined-cycle power plants, even those without significant noise controls, do not produce discrete tones that are prominent or noticeable at typical receptor distances. At the monitoring locations modeled here, no significant tones are anticipated.

That is not to say that audible tones are impossible—certain sources within the plant such as the combustion turbine inlets, transformers, pump motors, gearboxes, etc. have been known to sometimes produce significant tones. The Applicant will anticipate the potential for audible tones in the design and specification of the plant's equipment and take necessary steps to prevent sources from emitting tones that might be disturbing at the nearest receptors.

8.5.5.3.7 Operations Vibration

Experience at similar facilities demonstrates a very low probability for either ground-borne or airborne-induced vibration impacts to surrounding land uses. The SBRP equipment that would be used in the proposed project is well balanced and is designed to produce very low vibration levels throughout the life of the project. An imbalance could contribute to ground vibration levels in the vicinity of the equipment. However, vibration-monitoring systems installed in the equipment are designed to ensure that the equipment remains balanced. Also, given the distances from the actual equipment to the nearest receptor locations, as well as the inherently low vibration levels from the plant's well-balance machinery, ground-borne vibrations would not expected to be even detectable above the residual background vibration environment at the nearest receptors.

The proposed project is primarily driven by gas turbines exhausting into a selective catalytic reduction (SCR) duct and a stack silencer. These very large ducts reduce low frequency noise, which is the main source of airborne-induced vibration of nearby structures. Given this alleviation of airborne energy that might cause induced structural vibrations, along with the fact that the closest receptor buildings consist of tilt-up concrete buildings, airborne-induced vibrations are not expected to be above the threshold of detectability.

Thus, impacts from operations vibrations are considered to be insignificant.

8.5.5.4 Cumulative Noise Impacts

There are no noise sources in the Chula Vista area that will contribute to SBRP noise levels in a manner that would result in a cumulative impact. The most prevalent noise in the area is from the I-5 freeway; even during late-night/early-morning hours. This source, together with traffic on local streets, railway operations, and aircraft overflights, actually helps to considerably mask current SBPP noise at most community locations throughout the daytime and nighttime. Since the SBRP will be designed to be substantially quieter than the SBPP, this masking of and inability to discern the SBRP will be at least as effective in the future as it is in the existing environment.

Based on the absence of notable cumulative noise sources in the Chula Vista area, which would be additive to SBRP noise, cumulative impacts for the Project are not considered significant.

8.5.6 Noise Mitigation Measures and Reduction Design Features

The following noise reduction design features are included in the project to ensure meeting the appropriate noise criteria during normal operations.

- Housing the combustion turbine generators, steam turbine generator, fuel gas compressors, and water treatment equipment and related support equipment (pumps, valves, compressors, etc.) inside of acoustically treated buildings;
- Noise mitigation strategies for the heating, ventilation, and air conditioning (HVAC) systems;
- Low-noise sound level specifications for the heat recovery steam generator packages, the combustion turbine air inlets/filters, the air-cooled condenser, the transformers, the boiler feed pumps, and the cooling water heat exchanger (and other, secondary equipment items);
- Noise-control packages for each heat recovery steam generator, including stack silencers, increased casing thickness, and/or a transition duct acoustical shroud;
- Combustion turbine inlet silencers;
- Air-cooled condenser and cooling water heat exchanger low-noise designs, including low-speed fans;
- Localized noise barrier walls around the main power transformers;
- Low-noise features for the boiler feed pumps (possibly enclosures and/or casing blanket packages); and
- Steam and discharge vents will be equipped with appropriate silencers.

The implementation of these design features during the detailed design process will result in the Project meeting the Chula Vista Noise Ordinance, as well as the CEC's significance impact threshold. Consequently, no significant noise impacts during on-going operations are expected and, thus, no mitigation measures are expected to be required. However, to confirm that noise impacts remain insignificant, the following noise reduction and monitoring program is included for the Project.

8.5.6.1 Noise Mitigation Measure #1

The Applicant shall establish a telephone number for use by the public to report any significant undesirable noise conditions associated with the demolition, construction, and operation phases of the Project. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

8.5.6.2 Noise Mitigation Measure #2

Throughout the demolition, construction, and operation of the Project, the Project owner shall document, investigate, evaluate, and attempt to resolve all legitimate, project-related noise complaints.

The Applicant shall:

- Use the Noise Complaint Resolution Form typically suggested by the CEC or functionally equivalent procedure to document and respond to each noise complaint.
- Attempt to contact the person(s) making the noise complaint within 24 hours.
- Conduct an investigation to attempt to determine the source of noise related to the complaint.
- If the noise complaint is legitimate, take all feasible measures to reduce the noise at its source.

8.5.6.3 Noise Mitigation Measure #3

Noisy construction or demolition work (that which causes offsite annoyance as evidenced by the filing of a legitimate noise complaint) shall be restricted to 7 a.m. to 10 p.m. on weekdays and 8 a.m. and 10 p.m. on weekends unless otherwise permitted in accordance with Chula Vista Municipal Code Sections 19.68.060 and 17.24.050.

Construction equipment shall have appropriate silencing features or equipment installed and maintained during the course of the construction and demolition phases. For example, haul trucks and other engine-powered equipment shall be equipped with adequate mufflers. Stationary compressors and generators shall utilize noise-reduction enclosures or similar noise control features. Haul trucks shall be operated in accordance with posted speed limits. Truck engine exhaust braking shall be limited to emergencies.

To minimize potential noise impacts to wildlife habitat areas during the SBPP demolition phases, the existing berms around the South Tank Farm area shall, to the extent practicable in terms of demolition activities, be kept intact along the west and south sides for as long as possible. This approach will provide noise barrier attenuation benefits to activities within the South Tank Farm area itself, as well as to demolition activities in adjacent areas

8.5.6.4 Noise Mitigation Measure #4

To minimize construction-related truck traffic noise, stockpiling and vehicle staging areas shall be located at least 200 feet away from occupied residential dwellings or other sensitive receptor locations to reduce annoyances from vehicular traffic. Construction routes will be established to minimize truck movements near residential streets. In addition, vehicle speeds will be limited to 15 miles per hour on-site and 25 miles per hour off-site in sensitive receptor areas.

8.5.6.5 Noise Mitigation Measure #5

Temporary silencers on air and steam discharge vents will be used during the Commission-ing and Initial Start-up Phase. This will reduce noise from the few weeks of air and steam blow cleaning that only occurs during this part of the plant's life cycle.

8.5.6.6 Noise Mitigation Measure #6

The project design and implementation shall include noise reduction and control design features to ensure that operation of the project will meet the noise levels established by the Port, while accounting for ambient noise conditions. Specifically, the noise contribution of the project's operation shall not exceed the effective noise limit at any of the four closest representative residential receptors (AFC locations -1, -2, -3, and -5) or the closest representative commercial receptor (AFC-6).

Further, per CEC guidelines, the project's operation shall not exceed the existing nighttime background noise level at any of the four closest representative residential receptors by more than 5 dB.

Lastly, the project noise contributions to areas inside the BFMP development zone are seen to be consistent with the currently understood land uses and their associated noise restrictions.

8.5.6.7 Noise Mitigation Measure #7

A noise survey shall be performed within 90 days of the startup of commercial operations to confirm that the modeled noise levels are met. Any deficiencies shall be noted, and a schedule to correct them shall be developed. A copy of the report shall be provided to the CEC and the Port, which shall be kept apprised of progress made toward correcting any noise-related issues.

8.5.7 Involved Agencies and Agency Contacts

Agency contacts relative to noise issues are presented in Table 8.5-14.

TABLE 8.5-14
Agency Contacts

Agency	Contact	Issue	Telephone
San Diego Unified Port District	Ms. Randa Coniglio Real Estate Division San Diego Unified Port District 3165 Pacific Highway San Diego, CA 92101	Noise Standards	619-686-7217
Chula Vista Planning Department	Ms. Maria Muett Planning Division City of Chula Vista 276 Fourth Avenue Chula Vista, CA 91910	Noise Standards	619-691-5101

8.5.8 Permits Required and Permit Schedule

No permits are required relative to noise and there is, thus, no permit schedule.

8.5.9 References

Barnes et al. 1976.

Baker, Steve. 1999 - Personal communication with CEC Noise Staff.

Beranek, Leo. Noise and Vibration Control. Revised Edition. Institute of Noise Control Engineering. Washington, D.C. 1988.

California Energy Commission. 2002. Final Staff Assessment. Potrero Power Plant Unit 7 Project. Noise. Testimony of Jim Buntin.

Harris, Cyril M. Handbook of Acoustical Measurements and Noise Control, Third Edition. McGraw Hill, Inc. 1998.

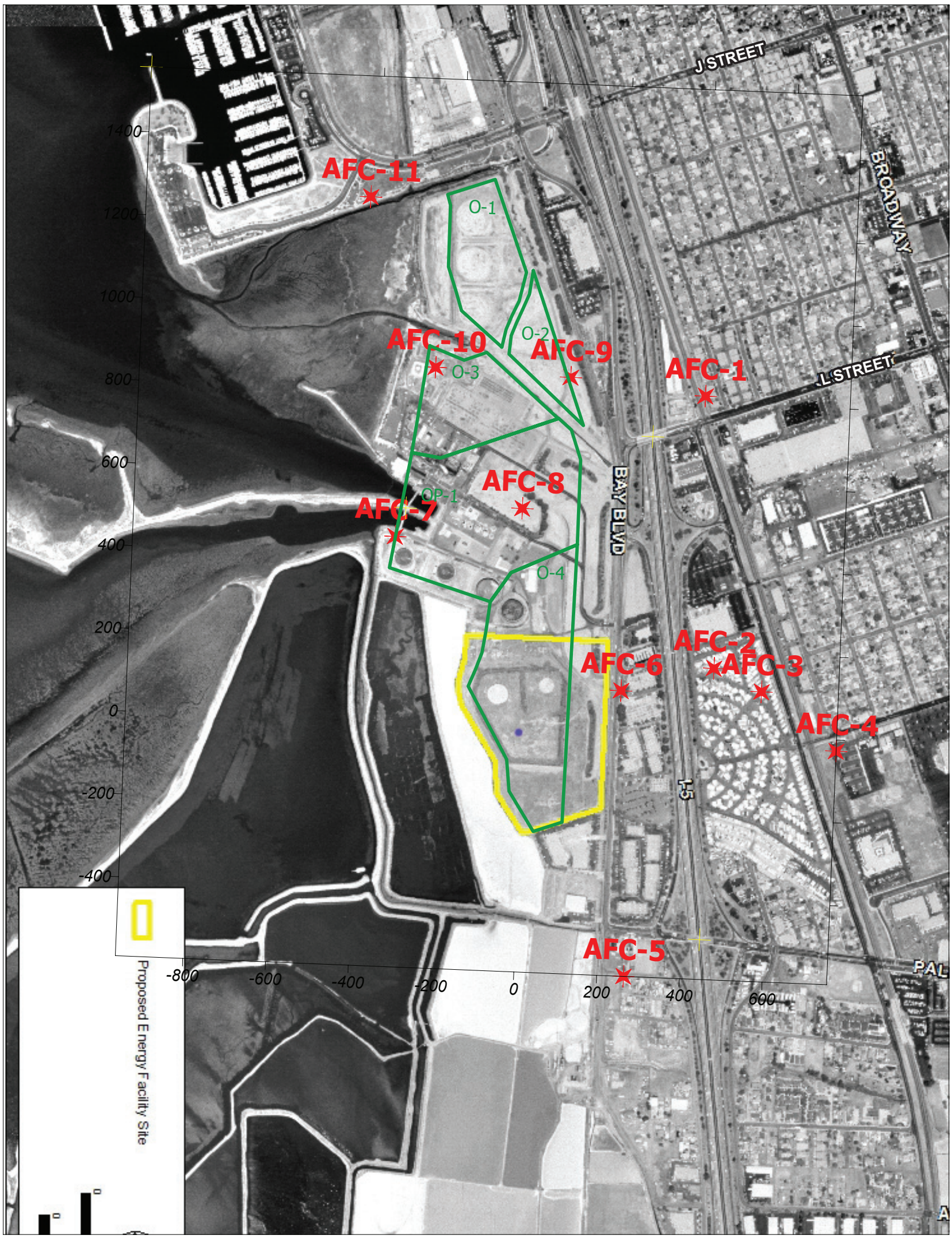
Miller, L.N., E.W. Wood, R.M. Hoover, A.R. Thompson, S.L. Thompson, and S.L. Paterson. 1978. *Electric Power Plant Environmental Noise Guide*, Vol. 1. Bolt Beranek & Newman, Inc. Cambridge, MA. Prepared for the Edison Electric Institute, New York.

Provencher, J. R. 2006 – Personal communication with Sr. Code Enforcement Officer, City of Chula Vista Planning Division.

Thornburn Associates, 1993. Hydraulic Pile Drives Work Out of a Tight Spot, Quietly. As found at http://www.ta-inc.com/newshtml/piledriver.htm

U.S. Environmental Protection Agency (USEPA). 1971. Noise from Construction Equipment and Operations, US Building Equipment, and Home Appliances. Prepared by Bolt Beranek and Newman for USEPA Office of Noise Abatement and Control, Washington, DC.

United States Environmental Protection Agency (EPA). Protective Noise Levels. Office of Noise Abatement and Control. Report number EPA 550/9-79-100. Washington, D.C. 20460. 1978.



Community Locations
- *AFC-1: West end of 890 Colorado Street apartments, by Unit D*
- *AFC-2: West side of Brentwood Park Mobile Home Park (by Unit F-8)*
- *AFC-3: East side of Brentwood Park Mobile Home Park (by Unit I-17)*
- *AFC-4: West property line of Harborside Elementary School*
- *AFC-5: 889 Stella Street, NW corner of front yard*
- *AFC-6: 1021 Bay Blvd. commercial park, near SW corner of lot (by sign)*
- *AFC-7: SBPP tank farm access road (at top of entrance berm)*
- *AFC-8: SBPP truck wash-off area (east of SBPP end)*
- *AFC-9: SBPP across Telegraph Creek (near future condo lots)*
- *AFC-10 SBPP storage yard, west of large switchyard*
- *AFC-11: Chula Vista Marina Park, near west end parking lot*

LSP South Bay, LLC
South Bay Replacement Project (SBRP)

December 14-16, 2005

- *Using cropped basemap from CH2M-Hill aerial (AACzoom2)*
- *Scales are matched per B&V modeling grid system (metric)*
- *PoSD land use planning zones to north of site (in green) is from Att 2 of CVBFMP EIR NoP document, dated 08/12/05*
- *Metric scale of approximately 1mm = 10.55m*

FIGURE 8.5-1
AMBIENT NOISE SURVEY LOCATIONS
SOUTH BAY REPLACEMENT PROJECT
CHULA VISTA, CALIFORNIA

Source: Alliance Acoustical Consultants, Inc., 12/05

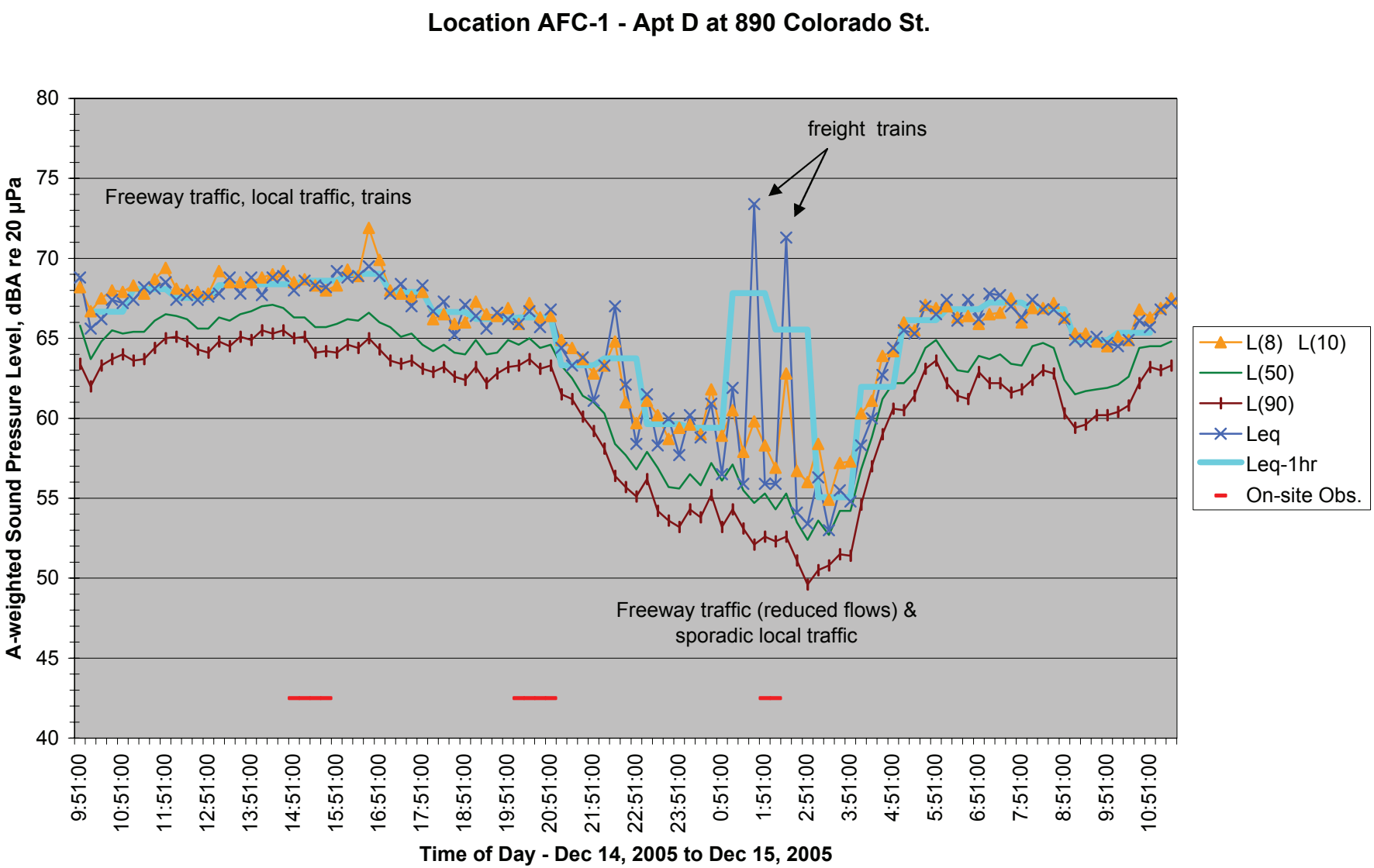


FIGURE 8.5-2
AMBIENT SURVEY - SOUND LEVEL HISTORY RECORD
SOUTH BAY REPLACEMENT PROJECT
CHULA VISTA, CALIFORNIA

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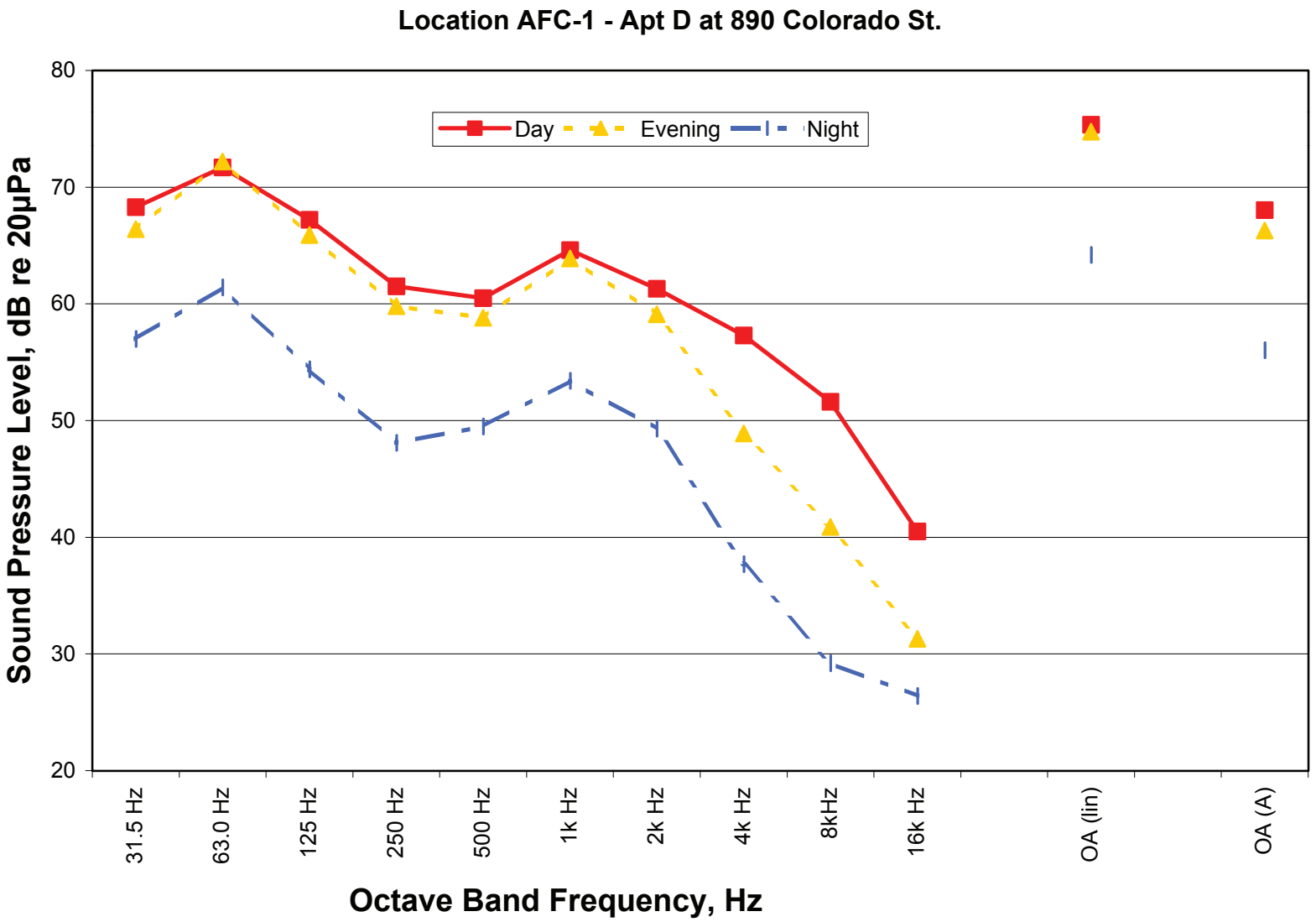

FIGURE 8.5-3
AMBIENT SURVEY - SPECTRAL SAMPLES
SOUTH BAY REPLACEMENT PROJECT
CHULA VISTA, CALIFORNIA

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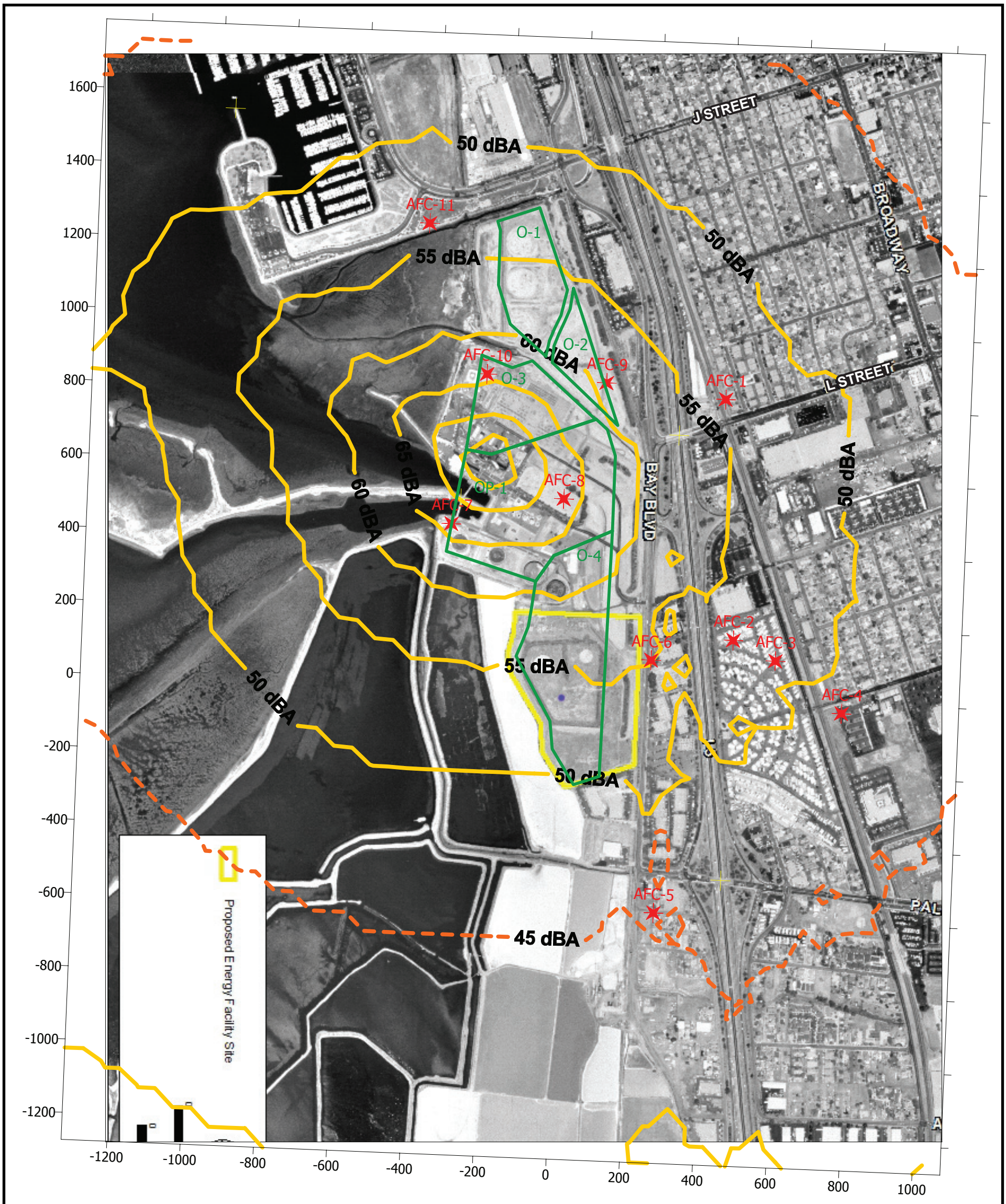

LSP South Bay, LLC
South Bay Power Plant (SBPP)

Re-created Noise Level Contours, SPL in dBA

- *Using measured noise levels from Dec '05 AFC Ambient Survey*
- *Using cropped basemap from CH2M-Hill aerial (AACzoom2)*
- *Scales are matched per B&V modeling grid system (metric)*
- *PoSD land use planning zones to north of site (in green) is from Att 2 of CVBFMP EIR NoP document, dated 08/12/05*
- *Metric scale of approximately 1mm = 10.55m*

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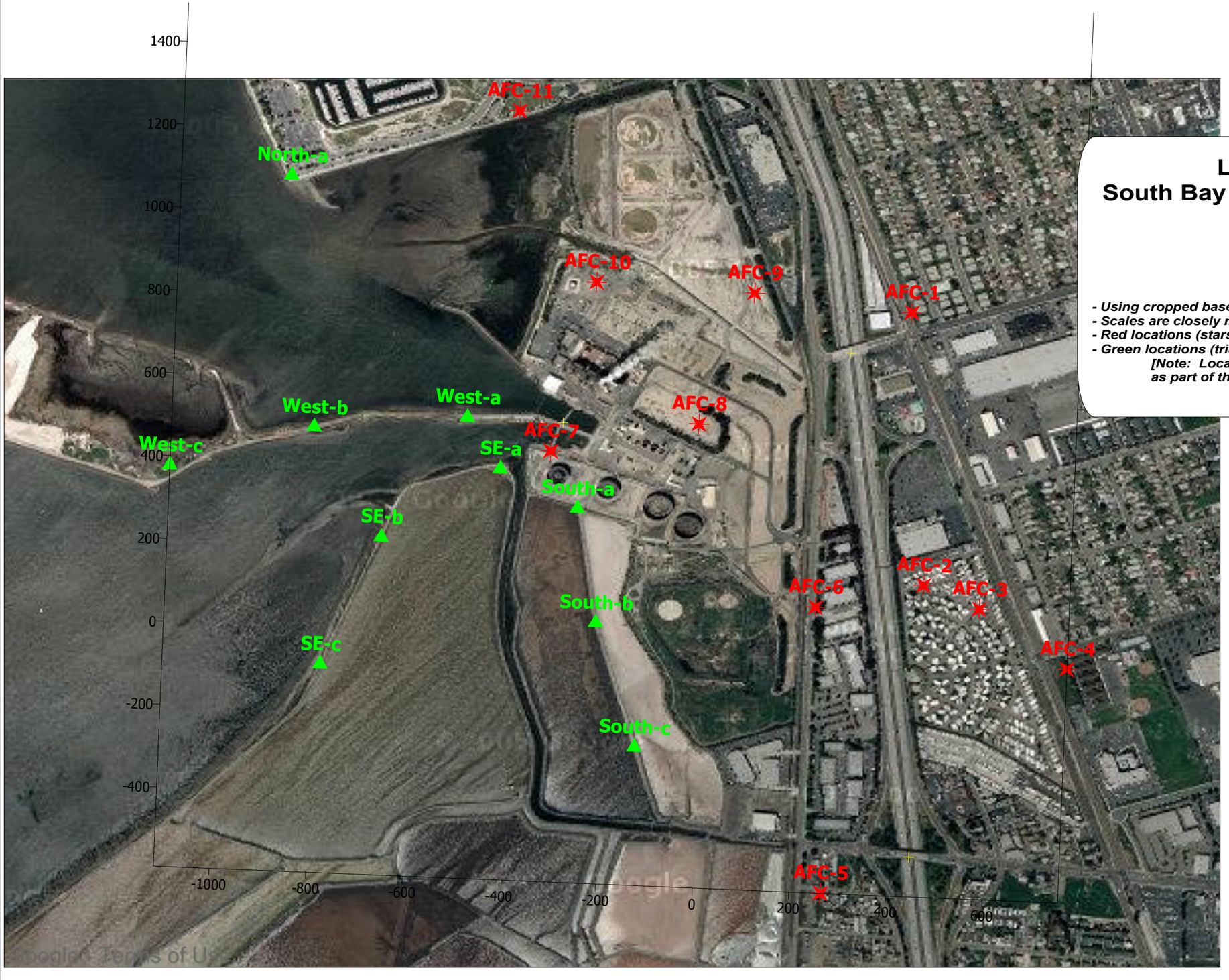
- *AFC-7: SBPP tank farm access road (at top of entrance berm)*
- *AFC-8: SBPP truck wash-off area (east of SBPP end)*
- *AFC-9: SBPP across Telegraph Creek (near future condo lots)*
- *AFC-10 SBPP storage yard, west of large switchyard*
- *AFC-11: Chula Vista Marina Park, near west end parking lot*

FIGURE 8.5-4
SYNTHESIZED MODEL OF EXISTING CONDITIONS
SOUTH BAY REPLACEMENT PROJECT
CHULA VISTA, CALIFORNIA

Source: Alliance Acoustical Consultants, Inc.

CH2MHILL



LSP South Bay, LLC
South Bay Replacement Project (SBRP)

- Using cropped basemap from Google Maps (aerial2.jpg)
- Scales are closely matched per B&V modeling grid system (metric)
- Red locations (stars) are same as used in 12/2005 Ambient Noise Survey
- Green locations (triangles) are for potential wildlife habitat concerns
[Note: Locations AFC-7, -8, -9, -10, and South-a will be demolished as part of the Project demolition/construction activities]

FIGURE 8.5-5
DEMOLITION AND CONSTRUCTION NOISE IMPACT ANALYSIS LOCATIONS
SOUTH BAY REPLACEMENT PROJECT
CHULA VISTA, CALIFORNIA

Source: Alliance Acoustical Consultants, Inc.

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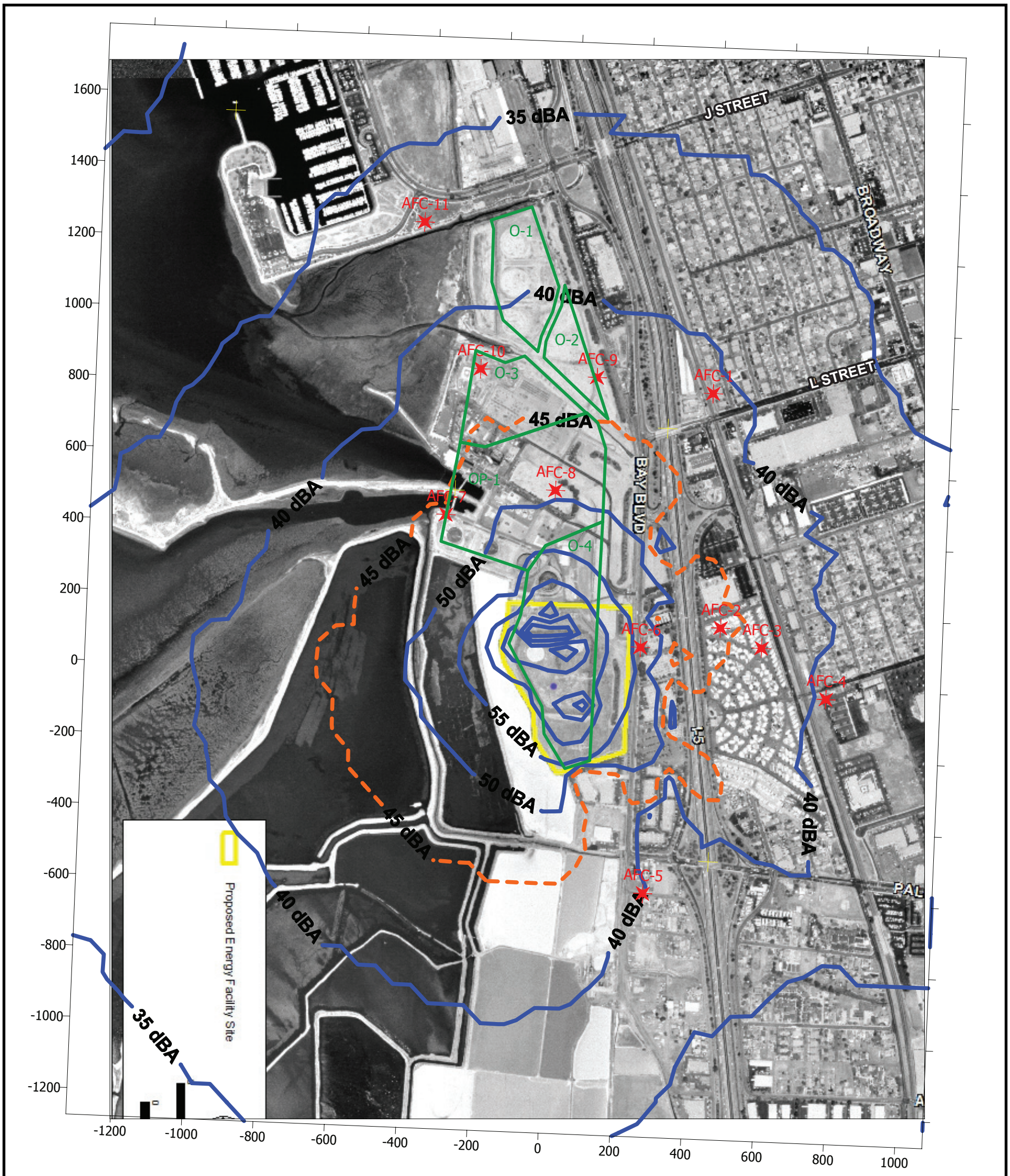

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- *AFC-10 SBPP storage yard, west of large switchyard*
- *AFC-11: Chula Vista Marina Park, near west end parking lot*

LSP South Bay, LLC
South Bay Replacement Project (SBRP)

Predicted Noise Level Contours (blue lines), SPL in dBA

- *Using B&V Plant Layout per 136469-DS-0006E, Rev. G of 5 May 2006*
- *Using B&V Noise Emissions per Summary Update Memo of 08/15/05 and Marley ACC information of Dec 2, 20, & 21 2005; with updates*
- *Using cropped basemap from CH2M-Hill aerial (AACzoom2)*
- *Scales are matched per B&V modeling grid system (metric)*
- *PoSD land use planning zones to north of site (in green) is from Att 2 of CVBFMP EIR NoP document, dated 08/12/05*
- *Metric scale of approximately 1mm = 10.55m*

FIGURE 8.5-6
FULL LOAD OPERATIONS
FINAL SUBSTATION CONFIGURATION
SOUTH BAY REPLACEMENT PROJECT
CHULA VISTA, CALIFORNIA

Source: Alliance Acoustical Consultants, Inc.

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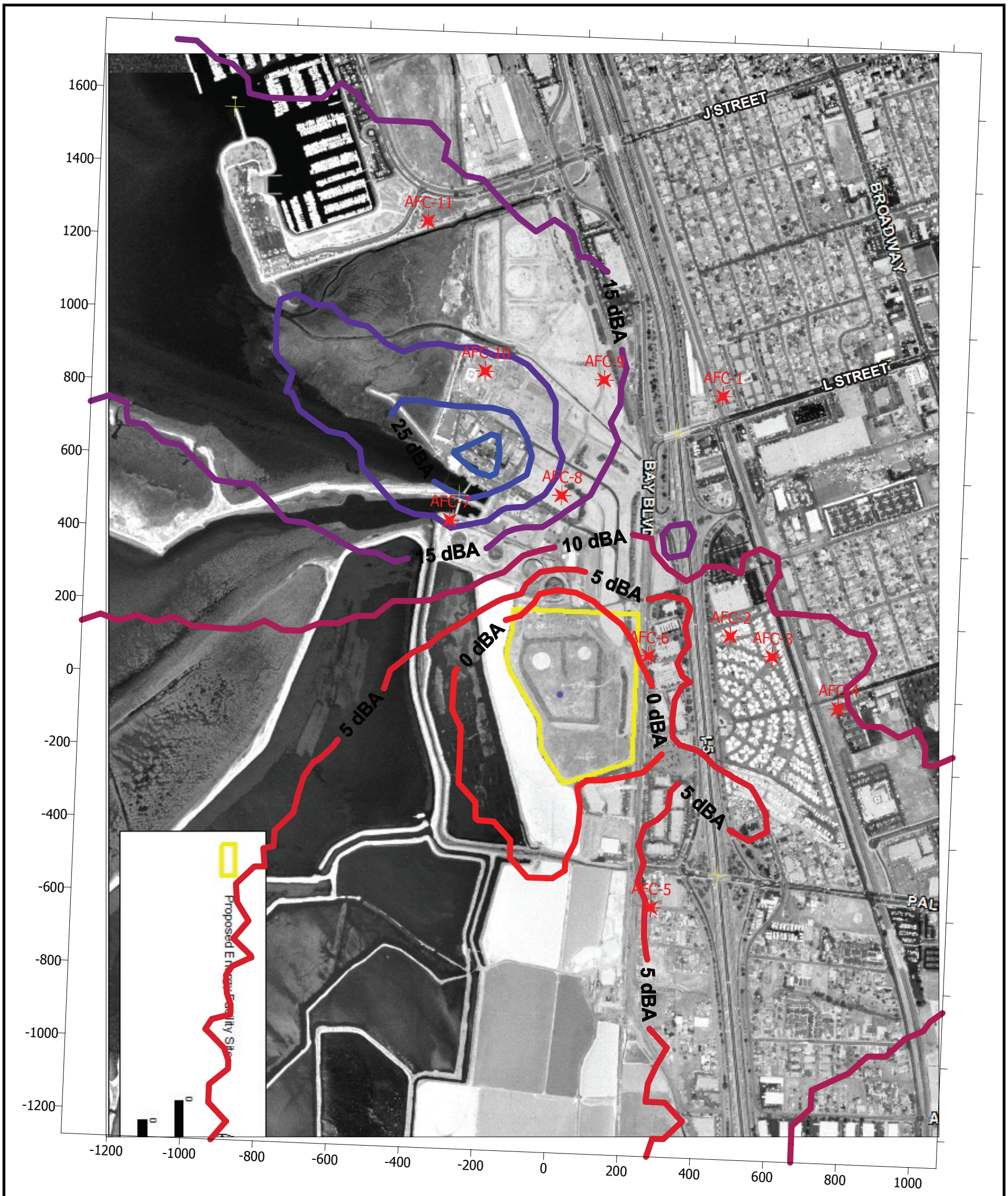

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- *AFC-11: Chula Vista Marina Park, near west end parking lot*

LSP South Bay, LLC
South Bay Industrial Site

Noise Benefit from Replacement Project, SPL difference in dB

- *Blue and purple lines are reduced noise levels....red lines are the same*
- *Using noise contour results of SBPP modeling and SBRP predictions*
- *Using cropped basemap from CH2M-Hill aerial (AACzoom2)*
- *Scales are matched per B&V modeling grid system (metric)*
- *PoSD land use planning zones to north of site (in green) is from Att 2 of CVBFMP EIR NoP document, dated 08/12/05*
- *Metric scale of approximately 1mm = 10.55m*

FIGURE 8.5-7
NOISE DIFFERENCE MAP
SBPP NOISE MINUS SBRP NOISE
SOUTH BAY REPLACEMENT PROJECT
CHULA VISTA, CALIFORNIA

Source: Alliance Acoustical Consultants, Inc.

CH2MHILL

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